

# The International Journal of Orthodontia, Oral Surgery and Radiography

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VOL. IX

ST. LOUIS, DECEMBER, 1923

No. 12

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## ORIGINAL ARTICLES

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### RATIONAL TREATMENT OF INFRACLUSION\*

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**I**NFRACLUSION, or too great an overbite in the incisal region, is becoming more and more recognized as one of the difficult problems in the treatment and correction of malocclusion of the teeth. This abnormal relation in the incisal region is frequently met with in Class I and Class II malocclusions, but is seldom found in Class III conditions. In fact, the reverse is usually true after the correct mesiodistal relation has been established, and often the lack of incisal overbite becomes a problem. In the treatment of Class II malocclusions, the overbite is materially decreased, but not always entirely correct, as soon as the correct mesiodistal relation is established. This is found to be so where no attempt has been made to overcome the deep overbite. In my opinion, Class I malocclusions, associated with excessive incisal overbite, present the greatest difficulties in establishing the normal occlusal relations.

The incisal occlusion varies in the white race with different individuals, and the normal ranges from an end to end relation to an overlap of .10 inch. The reason for this variation is generally attributed to the ratio of tooth material in the mandibular arch to that in the maxillary arch, anterior to the first permanent molars. When the combined mesiodistal width of the incisors, canines and premolars in the mandibular arch is large compared to the combined mesiodistal width of the same teeth in the maxillary arch, the incisal overbite is short. Where the reverse prevails, or the tooth material in the mandibular arch anterior to the first permanent molars is small in comparison to the same teeth in the maxillary, the overbite is deeper.

Two sets of casts in my collection were selected at random and measured,

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\*Read before The American Society of Orthodontists, Chicago, Ill., April 9-11, 1923.

and strange as it may seem, the combined width of the maxillary teeth in each case was identical, but the mandibular was quite different. In case No. 319 the maxillary teeth in question measured 3.25 inches while the mandibular teeth measured 2.58 inches. In case No. 1745 the maxillary teeth measured 3.25 and the mandibular teeth measured 2.82 inches.



Fig. 1.

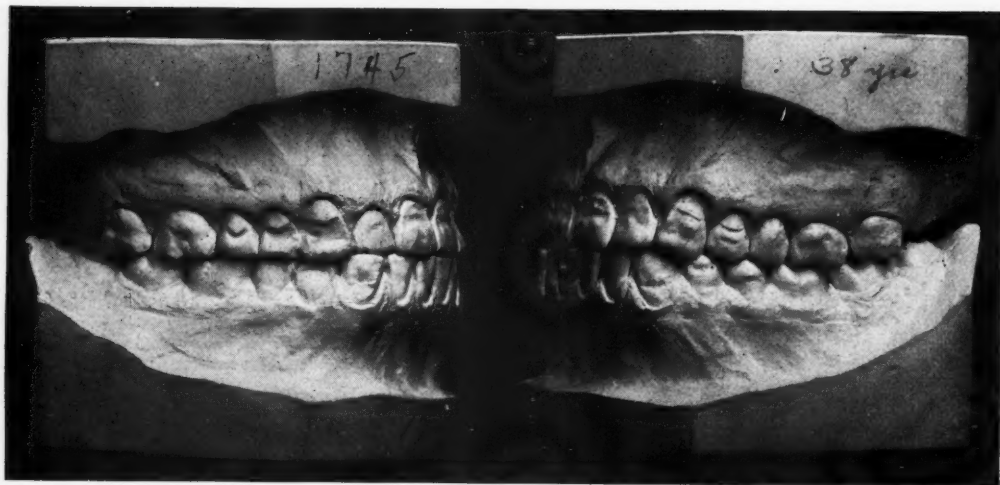


Fig. 2.



Fig. 3.

By comparing Figs. 1 and 2 the difference in overbite in these two cases is readily seen.

But this difference in tooth material is not the entire cause of variation in incisal overbite. Figs. 3 to 13, made from plaster casts of normal ar-



Fig. 4.



Fig. 5.



Fig. 7.



Fig. 6.

rangement of teeth, show conclusively that the relation the maxillary incisors bear to the premolars and molars has much to do with it. Examination of twenty skulls in the collection of the Museum of Natural History corroborates this fact.

The reason that some of these cases have such short overbites is that the maxillary incisors are on a higher plane than the premolars and molars. In the two latter cases it will be observed that the maxillary incisors are on the same plane with the premolars and first molars, and that the mandibular

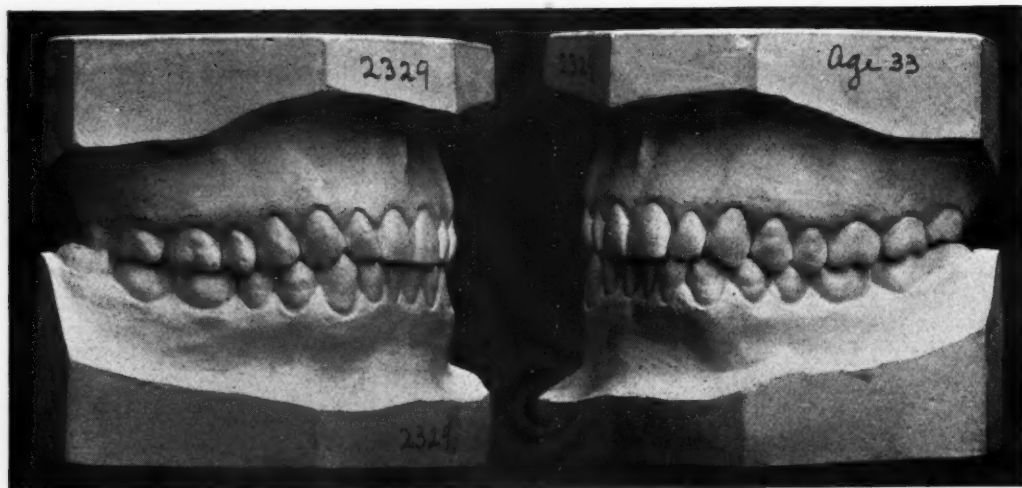


Fig. 8.



Fig. 9.

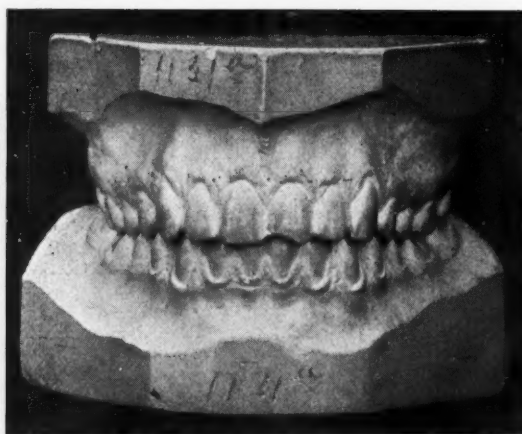


Fig. 10-A.

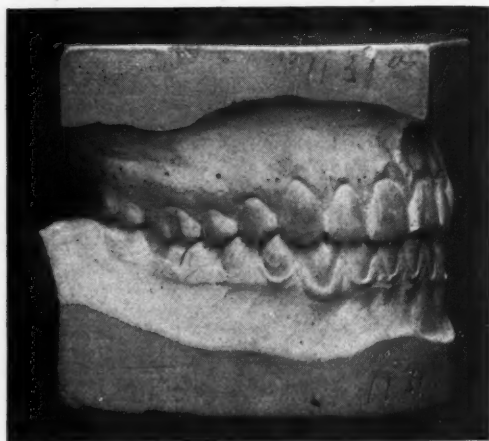


Fig. 10-B.

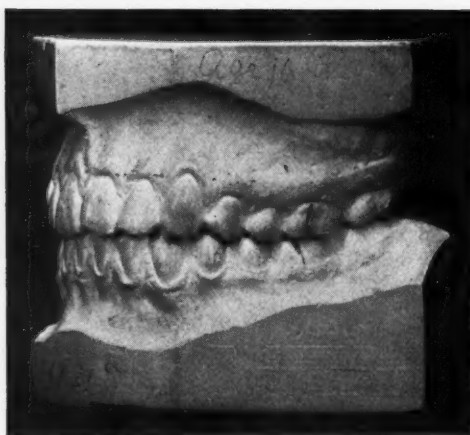


Fig. 10-C.



incisors are on a plane but slightly higher than the premolars and molars of the mandible, and that the incisal overbite is short.

It is the general belief that the cusps of the premolar and molar teeth vary in length depending on the overbite. If this were true there would be a total absence of cusps when the incisal teeth occluded end to end. Such a condition has never been observed by the writer except through abrasion. The well-known skull *Secretum Apertum*, Figs. 14 and 15, shows well defined cusps or deep sulci in the premolars and molars, with practically no incisal overbite, and so do Casts 1421 and 2829 previously shown.



Fig. 11.

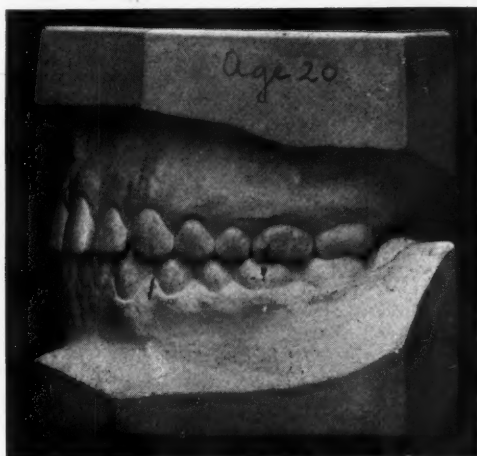


Fig. 12.



Fig. 13.



Fig. 14.

Thus far we have considered adult cases showing normal development, but as orthodontists we have a different problem. The cases that come to us are deficient in growth in one or all of three directions along with various complications.

First: Lack of lateral growth during development.

Second: Lack of forward growth during development.

Third: Lack of vertical growth of the buccal teeth during development.

This is often quite pronounced in the deciduous denture.

This paper will be confined to a consideration of the treatment of cases in the third group.

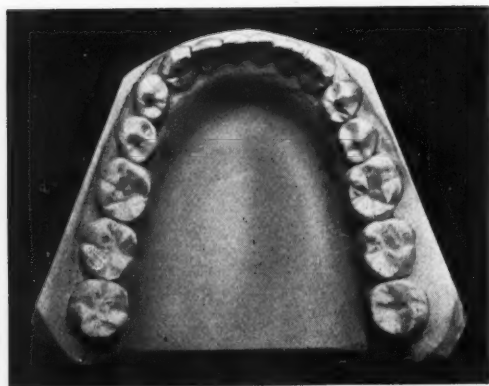


Fig. 15.

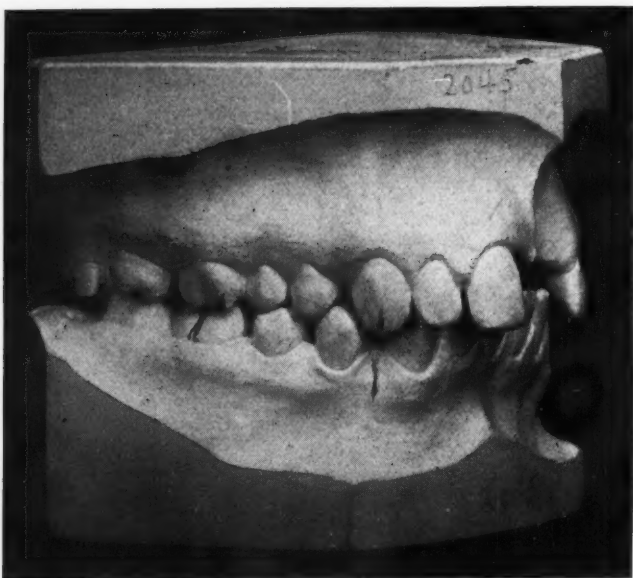


Fig. 15-A.

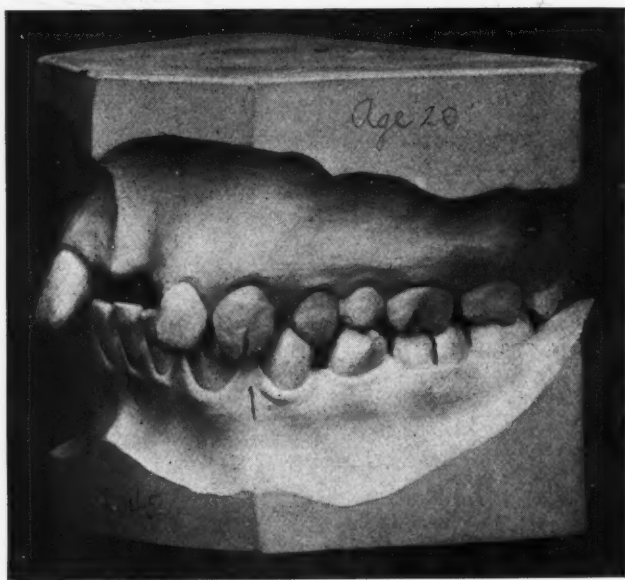


Fig. 15-A.

We have been told for years that the normal overbite in the incisal region implies that the mandibular incisors are covered over by the maxillary incisors from one-fourth to one-third of their length. This statement has been handed down to us from one writer to another, and I am convinced it is erroneous. The occlusion in the incisal region, as said before, can vary from an end to end relation or no overbite at all to an overbite of .10 inch, and still be normal, depending upon the type of teeth and their arrange-



Fig. 15-B.

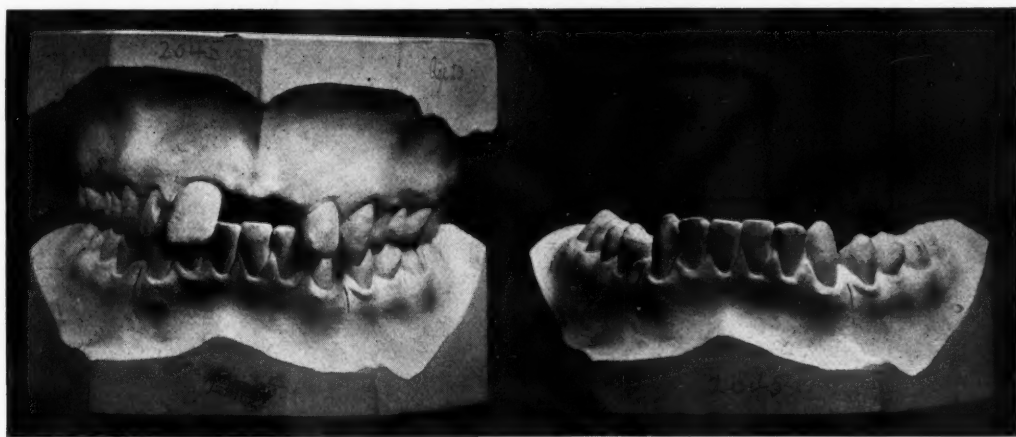


Fig. 16.

ment, but I have never seen a normal arrangement of the natural teeth in a caucasian with an overbite as great as one third of the length of the mandibular incisors.

From observation during a period of years, I am convinced that lack of vertical growth in the premolar and molar regions resulting in too much overbite in the incisal region, is responsible for the relapsing of the mandibular incisors to their former positions far more than is generally recognized. I know that many orthodontists believe that the developing third molars are responsible for much of this trouble, but I question if any one can

definitely state that a developing tooth exerts any pressure on the teeth in front of it. (Figs. 15-A and 15-B.) Has any one been able to accurately measure the pressure exerted by a developing tooth?



Fig. 17.

It is not my purpose to endeavor to give you the etiology of this type of malocclusion. The longer I practice orthodontia, the less certain I become of the etiology of any type of malocclusion, but it does seem logical



that our civilization, extending over centuries, with our tremendous changes in food conditions, and lack of muscular development, as well as bone growth, is largely responsible for this deficiency in vertical growth.

I find that there is a difference of opinion, resulting in a difference in treatment, in connection with deep overbite cases; one side holds to the opinion that the lower incisor teeth, due to lack of function, have erupted to a too great length, and therefore should be depressed, while the other side holds that lack of vertical growth in the molar and premolar regions is responsible.

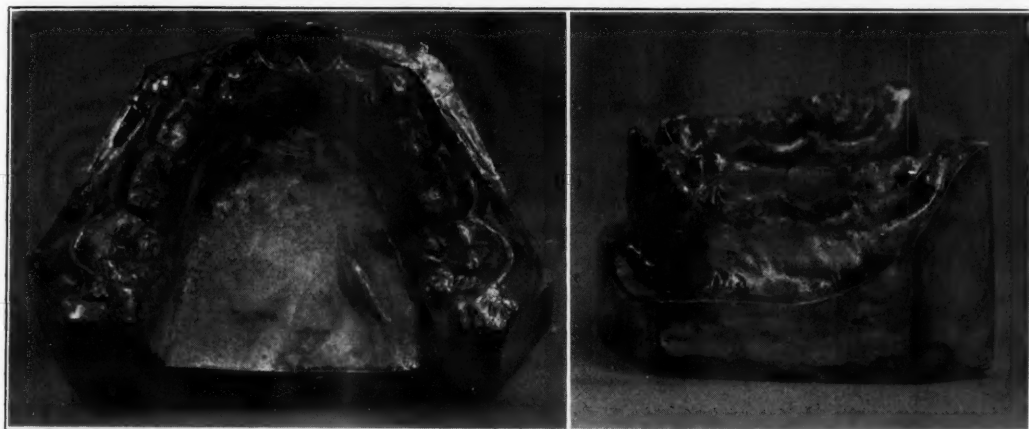


Fig. 18.



Fig. 19.

It is very well known that where a tooth in either jaw has lost its occlusal antagonist, it elongates, but this is a slow process and might, I believe, be justly termed a pathologic condition. I have never seen such a condition in the mouth of a child under fifteen years of age. On the contrary, I have seen many cases where mandibular incisors are decidedly long in relation to premolars and molars before the fifteenth year. (Fig. 16.)

I shall now proceed to outline rational treatment for such cases, assuming that the cause is lack of vertical growth of the molar and premolar teeth.

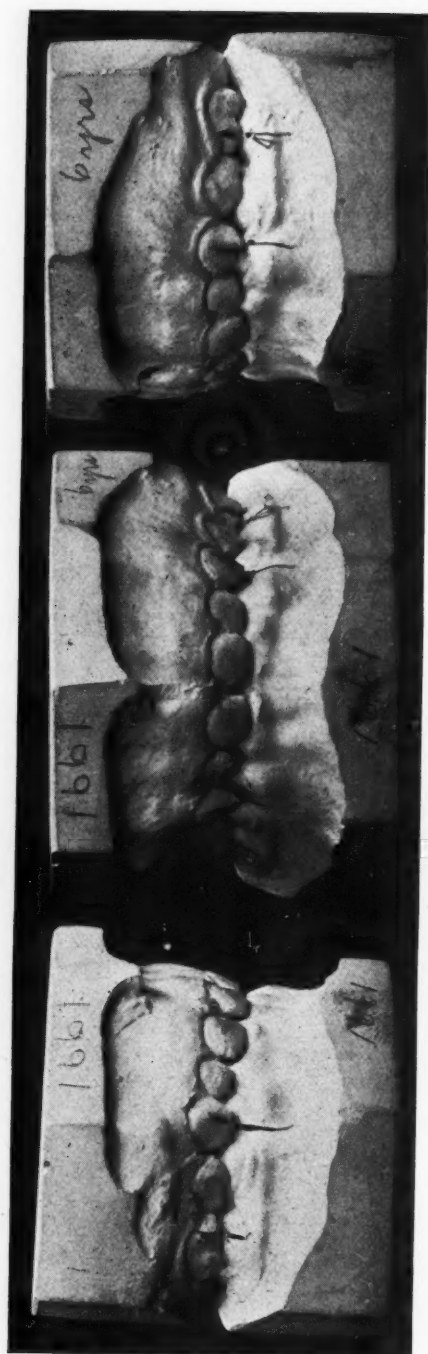


Fig. 20.



Fig. 21.

I am convinced that continuous delicate pressure is preferable to intermittent force as a means of stimulating activity of the bone cells. I am also convinced that successful orthodontic treatment should be finished by the time all the permanent teeth, except the third molars, have completed their eruption, and growth. Therefore, in cases showing pronounced lack of vertical growth of the deciduous molars, combined with excessive overbite, in



Fig. 22.



Fig. 23.



Fig. 23.

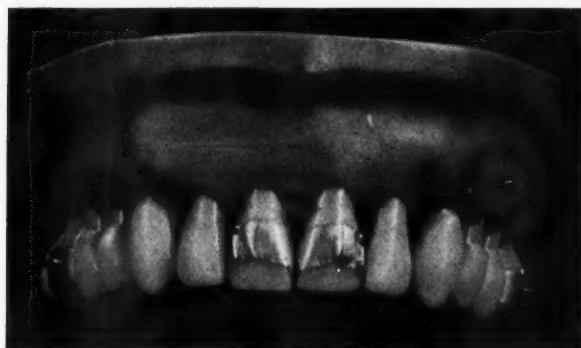


Fig. 24.

either Class I or Class II conditions, I have made it a practice, since 1908, to build up the mandibular deciduous molars prior to, or about the time of, the eruption of the first permanent molars. (Fig. 17.) Various methods have been used in building up these deciduous teeth, but the method I will give here has been proved the most satisfactory and the least annoying to the patient.

The four mandibular deciduous molars, if free from decay, are ground away slightly on the buccal and lingual surfaces, an impression is taken in compound and the impression of the ground teeth built in with amalgam.



Fig. 25.

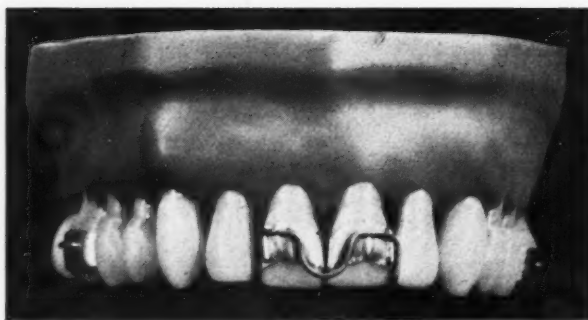


Fig. 26.

(Fig. 18.) When the amalgam is set the impression is poured in plaster. When this is separated, the four deciduous molars are of metal and on these is placed Taggart's inlay wax in the form of an over-layer and accurately carved so as to occlude in a normal way with the opposing teeth. (Fig. 19.) If it is a Class II case the over-lays are so carved that they will occlude properly when the arches are correct mesiodistally. These are cast in hard gold, preferably 8 per cent platinum with pure gold, and when finished and polished, are cemented on the deciduous teeth. This opens the bite from .05 to .12 of an inch. Such over-lays, if accurately made, so that they occlude



properly, cause practically no annoyance to the child and are left in place until the roots of the deciduous teeth resorb. This method is never resorted to unless the radiograms show the presence of the premolar teeth under the deciduous molars.

If it is desirable to widen the deciduous arches, and it usually is, attachments are soldered to the over-lays for the second deciduous molars for whatever type of appliance is desired to use on the case. In this way the first permanent molars are allowed to grow until they meet their antagonists without any mechanical interference. When such a procedure is followed, there is a constant stimulation from muscular force exerted through these over-lays on the underlying teeth and their investing tissues as well as on the opposing teeth, and while it has not been found 100 per cent efficient, it seems to be the most logical way of stimulating vertical growth in these cases.

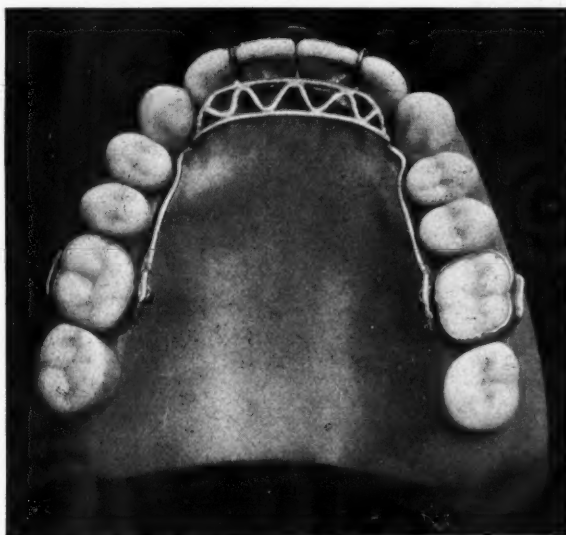


Fig. 27.

In extreme cases of Class I, if I can get the child before the eruption of the first permanent molars, I build up the mandibular deciduous molars first, and a year or two later, if the case requires it, I treat the maxillary deciduous molars in a like manner. (Figs. 20 and 21.) You may ask how I know that the first permanent molars will not grow to a higher plane during development and thus obviate all this. My answer is that I do not know, but judging from the great number of cases in later life presenting excessive overbites, it is fair to assume that they will not. I can recall but three cases where this vertical growth of the first permanent molars progressed to such an extent as to throw the deciduous molars out of occlusion. One case was shown to me by Dr. Bogue, and two are in my own collection. (Figs. 22 and 23.)

You may also ask how I know that during development and growth of the first permanent molars that the deciduous molars do not grow vertically also. My answer is that I do know that in the majority of cases the de-

ciduous molars do reach a higher vertical plane during development, for if they did not we would find either excessive overbite or a condition similar to that shown in the two previous illustrations.

I am also convinced that the second permanent molars may grow to a higher plane than the first permanent molars, and therefore, I never consider the treatment of a deep overbite case completed until the second permanent molars have reached their full vertical growth. In extreme cases, it is frequently necessary to resort to the use of a bite-plane of some description on the permanent teeth, for I find that this lack of vertical growth extends over the entire period of development.

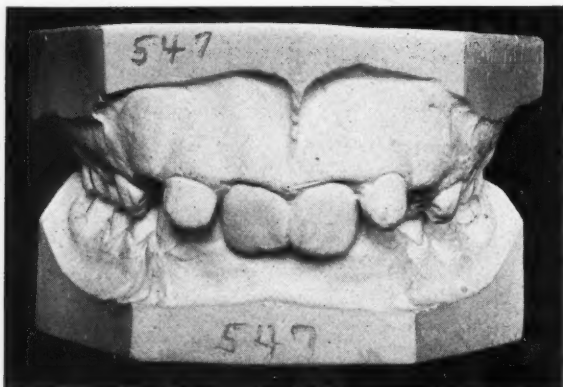


Fig. 28.

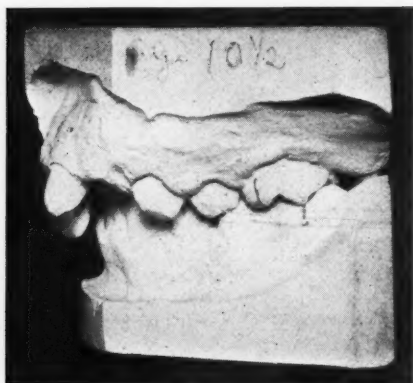


Fig. 29.

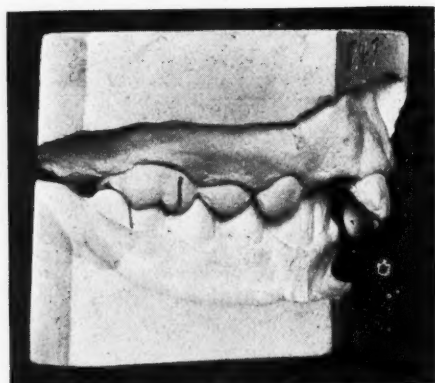


Fig. 29.

Figs. 28 and 29.—Casts of an extreme Class II, Division 2 case.

The bite-plane that has proved of the greatest value in my practice is constructed on the lingual wire as follows: Bands are fitted to the maxillary incisors, and to these are soldered cleats well toward the labial distal surface of the band parallel to the long axis of the tooth (Fig. 24). Heavy cleats are also soldered on the lingual side of the bands transverse to the long axis of the teeth in the desired position. The maxillary first permanent molars are banded and half round tubes soldered to their lingual surfaces parallel to the long axis of the tooth. With the four bands in place, an impression is taken, the bands removed and placed in their respective places, and a cast run in artificial stone (Fig. 25).

A removable lingual wire is then constructed so that it rests on the transverse cleats on the bands on the centrals. At the desired distance back from the incisal portion of this wire is soldered another wire, the ends reaching the main wire at about the median line of the canines. In the



Fig. 30.



Fig. 31.

Figs. 30 and 31.—Front view and profile of the child's face before treatment was begun.



Fig. 32.



Fig. 33.

Figs. 32 and 33.—Front and profile views of the child's face one year later.

space between these two wires is fitted a wire bent at right angles, so that the angles of the bends reach the wire on either side, and are soldered in place creating an open incline plane. The wire used thus far is .036 inch in diameter.

Close to the gingival end of the labial cleat on each central band is cut



Fig. 34.



Fig. 35.

Figs. 34 and 35.—Front and profile views of the child's face three years after the second pictures were taken.

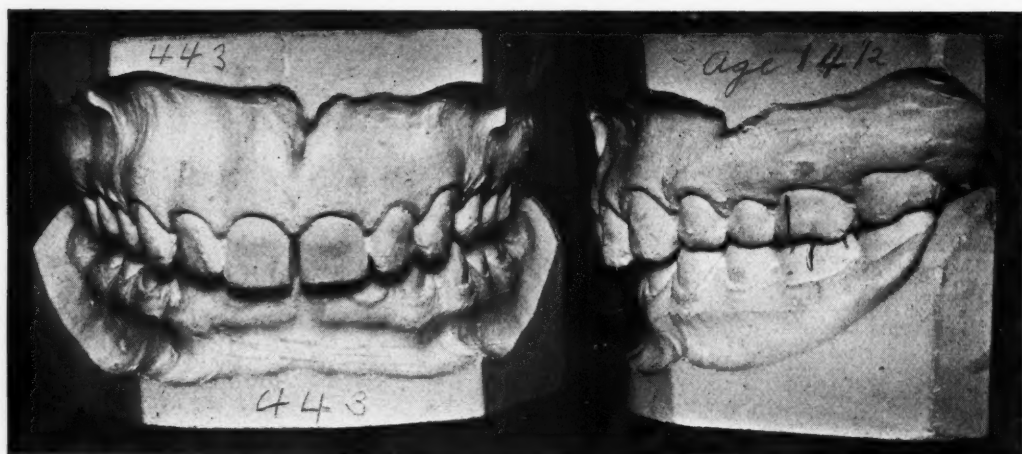


Fig. 36.

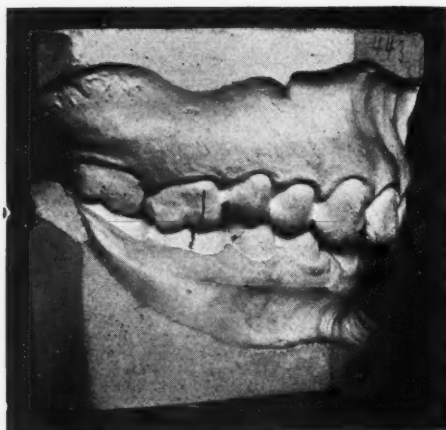


Fig. 36.

Fig. 36.—Casts of an extreme overbite case, Class I.



a notch. The object of this will be seen later. The end of a wire .026 inch is soldered to the front portion of the lingual wire at a point opposite the embrasure between the lateral and central incisors on one side. This is shaped so that it passes down the embrasure between these teeth and bent labially, and then arranged to pass up the labial embrasure opposite the



Fig. 37.—Front view photographs of the girl before and after treatment.



Fig. 38.—Profile pictures before and after treatment.

notch cut in the labial cleat. It is then bent so as to pass across the labial surface of both central bands. A loop is bent in the wire which may present either incisally or gingivally as desired. This loop should be midway between the labial cleats. The wire is then bent so that it assumes a similar position between the central and lateral on the opposite side, and is again

soldered to the lingual wire where it encounters it. If the loop in this labial wire is omitted, great difficulty will be experienced in removing and readjusting the appliance.

It is also important that this wire does not exert pressure on either the central or lateral as it passes from the lingual to the labial side of the teeth. It is also important that this wire be bent so that it securely seats itself in the notches in the labial cleats. The object of this wire is to stabilize the front portion of the lingual wire carrying the bite-plane and also to prevent the centrals moving labially (Figs. 26 and 27).

Then the bands are cemented onto the teeth they were made to fit and the appliance adjusted. If this is properly constructed, it will be found impossible for the patient to get the premolar and molar teeth in contact. As this appliance is worn constantly, in a surprisingly short time contact is accomplished. That the wearing of such an appliance tends to depress the mandibular incisors as well as the maxillary teeth is obvious, but in my opinion this depression is only temporary.

The next step in the treatment after a few months' wearing of the bite-plane, after the buccal teeth have been able to meet, is the construction of a Hawley retainer. As a rule, I band the maxillary first premolars in order to securely lock the plate in place, and expect it to be worn only a part of the time, as this is found to be sufficient after the proper relation is established. In young patients it is advisable that this plate should be worn at night until the second permanent molars have reached their full vertical growth. In adult patients I find it advisable that the plate be worn at night indefinitely.

#### DISCUSSION

*Dr. Robert Dunn.*—It gives me great pleasure to open the discussion of Dr. Young's paper, for it not only affords me the opportunity of giving expression to some of my beliefs in a subject in which I have been greatly interested for a number of years, but also the pleasure of discussing the paper of one who I know combines good common sense with his practical experience in solving the problems that confront the practitioner of orthodontia. There is one drawback, however, and that is I find that I can not disagree with him as much as I should like.

Infraclusion, or arrested vertical development in the molar and premolar region is, as the essayist states, one of the most difficult problems in the treatment of malocclusion of the teeth. He has failed to add, however, that it is also the most prevalent and dominating factor in the production of malocclusion, and the most amazing thing is that so few orthodontists recognize that fact. The lack of recognition of its presence in the slightest degree (and it has been my experience that it is invariably present in some degree in all cases of malocclusion of Class I and II, except those of so-called open bites) and the failure in establishing and maintaining sufficient vertical development for that particular case in hand are the main causes of the very many failures now prevailing.

In addition to what the essayist states regarding the variations in the normal incisal occlusion and the general attributed reason, I will add that it is by this means that nature is able to adapt any type of tooth, and even several types of teeth, to any particular type of person.

Why do the deciduous incisors erupt first and those of the permanent ones directly after the eruption of the first permanent molars? Mainly to gauge the amount of vertical growth in molar and premolar region and the size and form of that segment of the

circle of the dental arch as represented by the incisors and cuspids. Therefore, any arrest of vertical development in molar and premolar region will result in malocclusion of the teeth of any one of a number of types of Class I and II, the type depending upon the degree of arrested vertical development and perverted muscular functioning. There are a great many cases of malocclusion of the teeth of Division 1 Class II erroneously diagnosed as being the result of mouth breathing, when in reality, because of the arrested vertical development in the molar and premolar region, mouth breathing is the result not the cause.

In the treatment of cases where the premolars have erupted, I would suggest that if the operator exaggerates slightly the curve of Spee, being careful to see that the maxillary first premolar is the lowest point in the convexity, he will be surprised at the ease of retention and the permanency of his work.

After years of observation and study, I am convinced that arrested vertical development is but the result of lack of proper use of the deciduous denture, and is the one great dominant factor in producing by far the largest percentage of malocclusion of the teeth; and notwithstanding the claims of many eminent men it will be found, after due consideration and study, that malnutrition or biologic factors, only in so far as they may inhibit the desire of the individual to use his teeth, can in only a comparatively few instances be considered real factors in the production of malocclusion of the teeth. Also that the bony tissues of the mandibular and maxillary arches and that of the dental arches (or alveolar process) must be treated as separate and distinct tissues, despite their microscopic similarity.

I am not entirely in accord with the essayist regarding the influence of the third molar. I believe the pressure from the eruption of either of the second or third molars will hasten the reversion where insufficient vertical development exists in molar or premolar region. There is little doubt, I believe, in the minds of most students of orthodontia concerning the efficacy of continuous delicate stimulation in the treatment of malocclusion of the teeth.

After many trials of crowning the deciduous molars extending over a considerable period of time and with various results, which might of course be due to lack of proper technic, I have abandoned their use for at least the present, delaying the beginning of the treatment of such cases to the time just prior to the loss of the deciduous molars, and extending the same over the period of the eruption of the premolars, designing the retention to take advantage of any depression of the incisor teeth resulting from the treatment; for those teeth will invariably return to their normal vertical positions. It is during this period that I have achieved my greatest successes in the treatment of arrested vertical development.

Like the essayist, my observation and experience preclude any thoughts regarding the possibility of the first permanent molar developing to a higher plane without mechanical assistance. I shall not go into the discussion of appliances, for the reason that I can take little or no exception other than that already mentioned to the essayist's methods, and working along similar lines can add little that would be of interest and value at this time. Suffice to state that I have tried Dr. Young's methods and found them most efficient.

In concluding my discussion, I wish to say that the essayist has presented a subject that is of vital importance to every orthodontist, and those who will give the matter their careful consideration will be relieved in the future of many painful and embarrassing incidents that have frequently marred the past. It is my belief that over seventy-five per cent of all the failures (and I am putting it mildly) are due to lack of recognition of this very important subject of arrested vertical development in molar and premolar region, and no doubt, accounts for the promulgation of the theory of "Individual Normal."

The human race of today works and eats along the lines of least resistance, and in spite of the active propaganda concerning the use of food stuffs containing proper vitamins, etc., there will be no decrease in the number of cases of malocclusion of the teeth; in fact, we must expect to find an increase. Furthermore, unless there is a decided advance over the present mode of living, the condition of arrested vertical development may be



Fig. 1.—Illustrating either a condition of infraclulsion of molars, a supraclulsion of anterior teeth or a mixed condition of both.



A.



B.



C.



D.

Fig. 2.—Illustrating method of diagnosing infraclulsion of molars or supraclulsion of anterior teeth. In either condition an "overbite" of anterior teeth is constant. Picture B shows jaws propped apart, exposing to view mandibular incisors and canines. Compare with picture A. Picture D corresponds to picture B. The face is longer from nose to chin, as proved by comparing with picture C. If facial outline of D shows an improvement over that of C the case is diagnosed as an infraclulsion of molars and treated as such; facial length is increased. Should facial length of D be deemed a detriment as compared to that of C, the case would be diagnosed as supraclulsion of incisors, and therefore treatment would not involve facial length. (Note: Photographs are taken without changing pose or camera, therefore a most accurate comparison for study is obtained.)



considered but the forerunner of a change in type of the dental apparatus and physiognomy of the human race.

*Dr. Clinton C. Howard.*—Conditions of infra- and supraclusion have, in the past few years, interested me more than any other one phase of malocclusion.

That portion of Dr. Young's paper dealing with the diagnosis of these conditions seems



A.



B.



C.



D.



E.



F.

Fig. 3.—A, B and C were made before treatment; D, E and F after treatment.



A.



B.



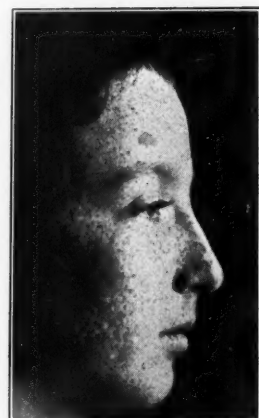
C.



D.



E.



F.



H.



G.

Fig. 4.—Illustrating Class I or neutroclusion. Overbite of incisors automatically corrected by developing the width of both arches. A, C, E, and G made before treatment. B, D, F, and H made after treatment.

inadequate. His method of comparing two groups of teeth in determining the existence of either one of the two conditions is unsound in principle. Before a group of teeth can be condemned as having erred in vertical eruption either one or the other group *must first be established as normal*.

In observing Fig. 1 the occlusal plane of the molar and premolar teeth is lower than that of the incisors. May I ask whether the molars are in infraclusion, or have the incisors erupted beyond the normal? Should it be claimed that the molars are in infraclusion, then the incisal plane must necessarily be established *as normal*. Conversely, should your diagnosis be supraclusion of the incisors you would have first established the molars *as normal*.



A.



B.



C.



D.

Fig. 5.—Illustrating a distoclusion (Class II, Division 1), complicated by a supraclusion of the second permanent molars.

In my investigation of this subject two facts have been established. First, that neither infra- nor supraclusion can be diagnosed by studying the relative position of the teeth. Second, that the nearest approach to a correct diagnosis can be obtained by analyzing facial outline. The method employed, as illustrated in Fig. 2, has proved sound in principle by clinical results obtained. The value of this method is most effective in Class I or neurocluding cases.

In case of distoclusion of Class II, the overbite of incisors is materially benefited by establishing a neuroclusion of the molars and premolars. In other words the "bite" is automatically raised, due to the existence of the "curve of Spee." Fig. 3 should

suffice to prove this fact, as no appliance was employed to alter the vertical position of either groups of teeth.

In Class I, or neutroclusion cases we are often confronted with a "deep overbite" of the incisors. Such cases show a width of deficiency in the molar and premo'lar region with the teeth inclining lingually, the jaws are "raised apart" by merely tipping the posterior teeth buccally, thereby automatically correcting the overbite of the incisors. A condition of this character is illustrated in Fig. 4.

In Fig. 5, a condition of "open-bite," in the anterior region is illustrated. This case was diagnosed as a supraclusion of the second permanent molars, and not an infraclusion of incisors, canines and premolars. It was further complicated by a distocclusion. In attempting to establish normal anterioposterior relationship of the arches, the "open-bite" was made more pronounced and the face made longer from the nose to lower border of the chin.

*Dr. Young.*—Have you the after treatment of this case?

*Dr. Howard.*—No, nor do I expect to obtain a pleasing result as I know of no practical method which will depress molars.

*Dr. Young.*—I hope you don't.

*Dr. Howard.*—Supraclusion of molars causes an open-bite of the anterior teeth. This is as clearly established in my mind as is the commonly discussed cases of infraclusion of molars: supra- or infraclusion of anterior teeth. In fact, we are called upon to diagnose and treat, whether we recognize it or not, any one of the above conditions as well as a complication of both infra- and supraclusion.

In closing an already too long discussion, permit me to express my doubt regarding the rationality of treating infraclusion of molars in young children. Such conditions unquestionably involve metabolism of vertical growth in this region, which undoubtedly is influenced by the eruptive force of the developing premolars. At what age, is this growth process, in different individuals, complete?

*Dr. Young (closing).*—I am very glad Dr. Howard discussed my paper as he did. I did not particularly stress the importance of the study of the facial lines as the great diagnostic feature in determining deep overbites. I absolutely agree with Dr. Howard that you must consider the facial lines in determining the proper method of treatment in these cases. I disagree with him, however, on some of his illustrations where he says the face could not be made any longer, or in the open-bite case that the face was too long. It does not appear that way to me. To date I have never seen a deep overbite case of a child up to twelve or thirteen years of age where I considered the face was too long; it has always been the reverse—the face was not long enough.

*Dr. Howard.*—You misunderstood me. I didn't say that. I said the open-bite of the anterior teeth.

*Dr. Young.*—All right. I do not see that the case you showed with the open-bite had too long a face. You did not have a profile picture, and this would have helped very materially in deciding the question. Furthermore, we must remember that a child of thirteen or fourteen has not finished developing. The head, and body generally, may grow considerably after this age while the teeth are usually fully developed. I think in many of these cases we will find the patient will grow up to the teeth.

Dr. Howard stated in his discussion that in some of the deep overbite cases we had a mixed condition, meaning by that that the mandibular incisors were too long, and the premolars and molars not long enough. I have not so observed it. I may be wrong, but my view of it is that it is due to lack of growth at this age. Later in life I think we find different conditions.

As I said in my paper, I do not treat these cases in this way where the radiograms show permanent tooth germs congenitally absent. I have many cases of extreme overbites that are not associated with missing tooth germs or premature loss of the deciduous teeth.

I also agree with Dr. Dunn and Dr. Howard that the building up of the deciduous molars at nine and ten years of age, and often earlier, so accelerates the resorption of the deciduous teeth as not to make it worth while. I prefer to start these cases much



earlier—five, six and seven years of age—and I have been very much pleased with the results I have obtained in this way.

Dr. Grieve's question I thought was answered in my paper, as I stated that to me it is lack of growth which extends over the whole developmental period. In the transition from the deciduous to the permanent dentures we find in certain cases that the second permanent molars are fully erupted at twelve years of age. In other cases, this same stage of development is not reached before fifteen or eighteen years of age. In the latter case, we must expect a longer period of treatment.

My reason for building up the deciduous teeth at such an early age is to take every advantage that I know of to overcome what I consider the most difficult problem in orthodontia—the elimination of the deep overbite.

In the case that I showed in my paper, where I started at six years of age and built up the mandibular deciduous molars and then two years later built up the maxillary deciduous molars, I fully expect to have to resort to a bite plate about the time of the eruption of the premolar teeth. I am convinced that the two best periods at which these deep overbite cases are most beneficially treated are, first and best, about the time of the eruption of the first permanent molars, and second, at the time of the eruption of the premolars. I think it much better to let a tooth grow during its eruptive process to a sufficient length to overcome the overbite, than to mechanically stimulate this growth after nature's process has been finished.

#### REPORT OF CASES\*

BY G. VERNON FISK, D.D.S., TORONTO, CANADA

THE first case which I wish to present is one of neutroclusion which required extensive root movement of the maxillary incisors.

The patient, a boy of seventeen, was referred to me by a rhinologist who had removed a pair of enlarged tonsils in August, 1918. Casts were made in September of the same year, and treatment was commenced in October. At that time, it was thought that space for the maxillary right second premolar could be gained most quickly by using a labial expansion arch on the maxillary teeth; a lingual appliance was adjusted to the mandibular arch.

Fig. 1 is an anterior view showing the median line of the face marked on the maxillary cast; this is a point which Dr. George Grieve brought to my attention, and which I think is very important. The original casts, both upper and lower, of all our cases are now marked in this way. The line is placed upon the lower cast with the mandible in true center. Each time the case presents, the original position of the mandible is determined by referring to the casts.

The relation of the teeth on the right side is shown in Fig. 2. Note the lack of room for the maxillary second premolar and the linguoversion of the anterior teeth. Fig. 3 is the buccal aspect on the left side; Fig. 4 is an occlusal view of the casts.

In June, 1919, the half-round pin appliance, as suggested some years ago by Dr. Hawley, was placed on the maxillary teeth. In December, 1920, a pin appliance was adjusted to the mandibular teeth attached only to canines,

\*Read before The American Society of Orthodontists, Chicago, Ill., April 9-11, 1923.

second premolars and first molars. This was put on to depress, one at a time, the slightly elongated canines, with delicate u-shaped springs. The lingual appliance still remained in place, and was later removed in March, 1921. The pin appliance was removed from the maxillary teeth in September, 1921, and from the mandibular teeth in May, 1922.

Final casts were made in June, 1922, about nine months after the removal of all appliances from the maxillary arch. Unfortunately, no photo-

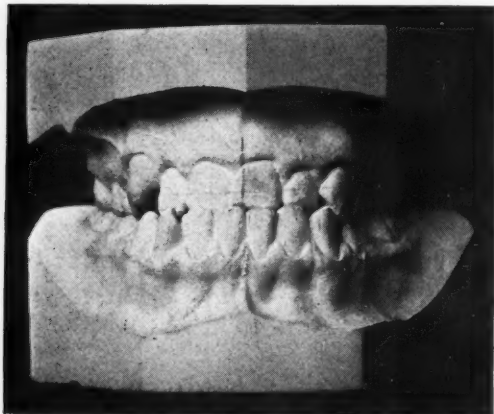


Fig. 1.

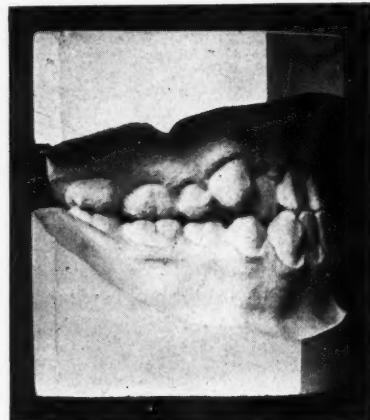


Fig. 2.

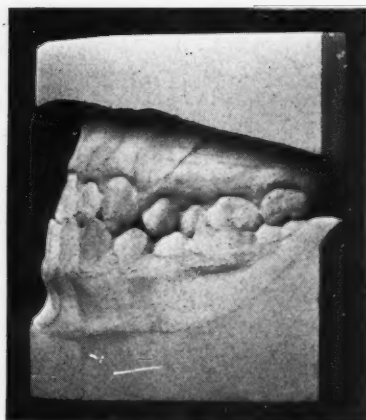


Fig. 3.

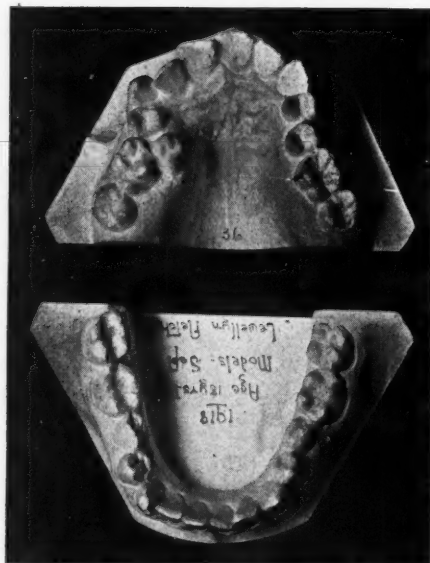


Fig. 4.

graphs of this patient were taken. I feel that it would have been advisable to have carried the roots of the maxillary incisors more labially. I either did not notice the defect at the time the appliance was removed, or these teeth tipped back slightly since. Figs. 5, 6, 7, and 8 show the result obtained.

I saw this patient in September, 1922, before he left to continue his studies at Yale University, and could detect no further undesirable change in the position of the teeth. Some of the illustrations show the teeth not

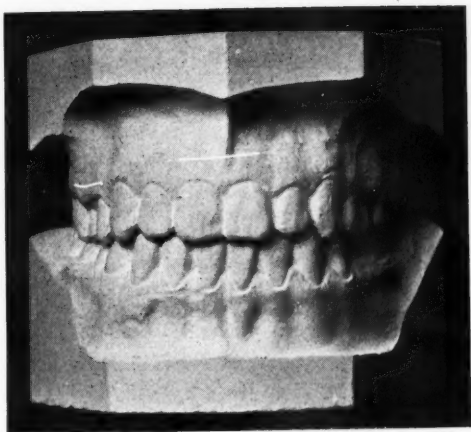


Fig. 5.

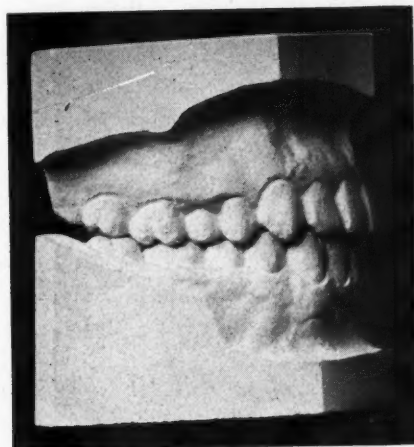


Fig. 6.

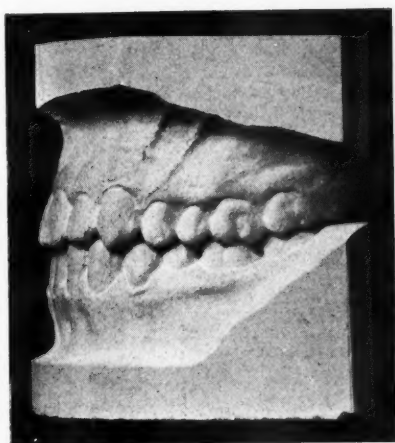


Fig. 7.



Fig. 8.

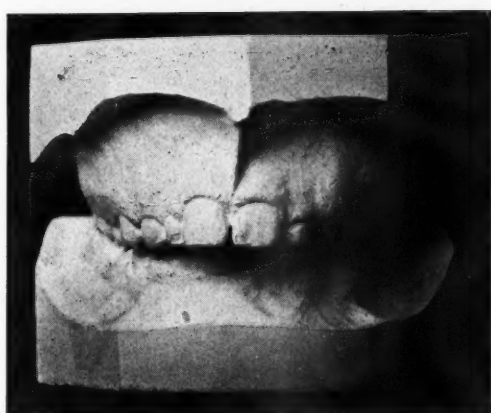


Fig. 9.

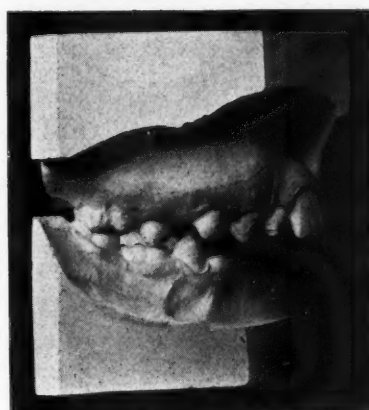


Fig. 10.

quite in occlusion. This was the fault of the photographer in not placing the casts together properly, as the occlusion was practically perfect.

The second case is one upon which I am reporting only progress; it is still under treatment. It is one of bilateral distoclusion, with characteristic deep overbite, in a girl ten years of age.

Figs. 9, 10 and 11 show the casts before the commencement of treatment. The right permanent maxillary second incisor is missing and the left one under-size. Figs. 12 and 13 are photographs of the patient. This is rather an unusual case, in that the right canine in the mandibular arch was lying

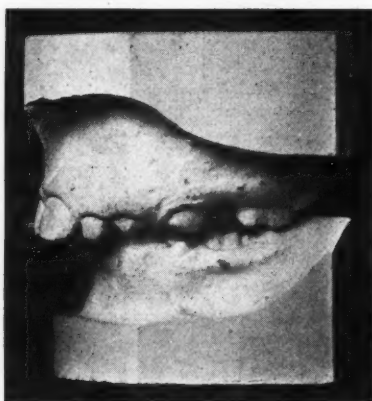


Fig. 11.



Fig. 12.



Fig. 13.

horizontally underneath the apex of the second incisor root, with the tip of the crown directed mesially and labially and extending beyond the median line, its lingual surface directed incisally.

Radiograms (Figs. 14 and 15) show the appliances in position. Several unsuccessful attempts were made to obtain these before adjustment of the appliances. Although not apparent in the picture, the crown of the tooth was found to be completely covered with a very thin layer of compact bone.

Treatment was commenced in December, 1919. At that time, a half-round pin appliance was placed on the mandibular teeth and a labial expan-



sion arch on the maxillary teeth. Space was gained in the mandibular arch for the impacted canine, and the roots of the right central and lateral were carried lingually, in order to facilitate the tipping up of this tooth into position.

In January, 1921, Dr. E. Fulton Risdon, an oral surgeon, exposed the crown of the impacted canine and removed some of the bone overlying its

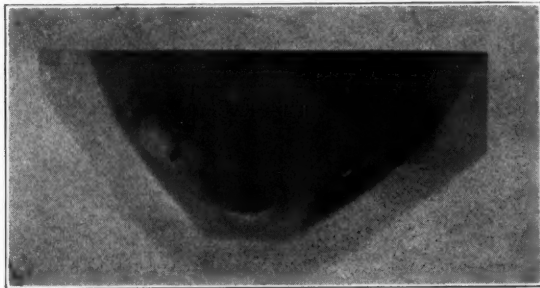


Fig. 14.



Fig. 15.

root. A spring was attached to the pin arch, and adjusted to tip up the canine. On account of the movement of the lips, especially during mastication, it was difficult to keep the spring in position and maintain the packing that was placed to hold back the soft tissue, the tooth lying very deep. As a result, the wound closed almost completely. Under a general anesthetic, a second incision was made in the soft tissues, and a band with a spur was

placed on the canine. This facilitated the attachment of the spring, but about May, 1922, the band loosened from the tooth and the spring was removed. Before the patient went out of the city in June, to be away for three months, the wound had completely closed. I did not see her again until the middle of September, when I found that the canine had continued



Fig. 16.

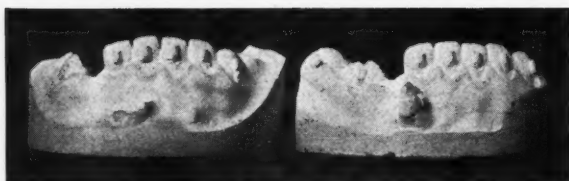


Fig. 17.

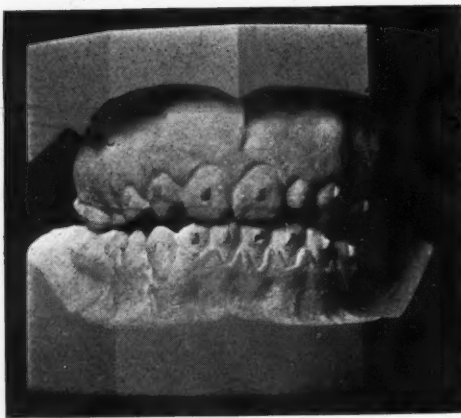


Fig. 18.

the movement already started by the spring to such an extent that it had opened the former incision about a quarter of an inch. Its position at that time is shown in Fig. 16. Shortly afterwards a small hole was drilled in the lingual surface of the tooth and a small wire ring cemented into the cavity, the spring adjusted to engage the ring, again attached to the arch, and the movement distally and incisally, continued. Fig. 17 presents two casts, the one on the left showing the position of the canine in December,

1921, while that on the right, its position in May, 1922, after a band and tube had been placed on the tooth. In November, 1922, a pin appliance was adjusted to the maxillary teeth with individual planes on the first incisors, to assist in opening the bite and the forward development of the mandible.

Study casts of the case at the present time with the planes still in position are shown in Fig. 18; this accounts for some of the posterior teeth not yet being in occlusal contact.

The right side is shown in Fig. 19. The root of the mandibular canine is not yet carried distally, but the crown is practically in position. On account of the missing maxillary second incisor, the canine and all teeth posterior to it are being carried mesially to close the space. Fig. 20 is a view

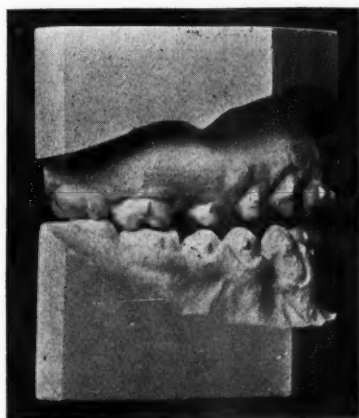


Fig. 19.

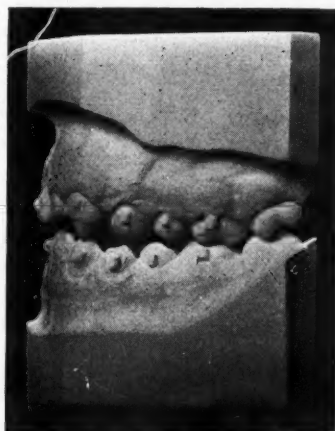


Fig. 20.

of the left side. The canine and premolars in the maxillary arch are being moved distally on this side to normal occlusion.

I regret the case is not yet finished, but thought it would be of sufficient interest to report at this time. I hope to present the completed case at a later date.

If I were starting this case today, I would not use the labial expansion wire on the maxillary arch as, with riper experience with the half-round appliance, I am convinced that the latter is an ideal one with which to correct such a case as this. The light u-spring with pin attached is most efficient for moving teeth along the arch to close the space of a missing tooth. I wish to state that my tendency toward the use of the pin appliance is due to the inspiration I have received from Dr. Grieve, with whom I have been associated for the past six years in the practice of orthodontia.

## REPORT OF A CASE SHOWING THE CONSERVATION OF A DEVELOPING TOOTH IN THE PRESENCE OF A CYST\*

BY HENRY F. HOFFMANN, D.D.S., DENVER, COLORADO

THIS case is interesting owing to the very complete history which covers a period of about five years, and also because an older brother of the patient developed what was probably a similar condition at about the same age, from apparently the same cause, and with the same termination.

A few years previous to starting treatment for this boy his older brother



Fig. 1.

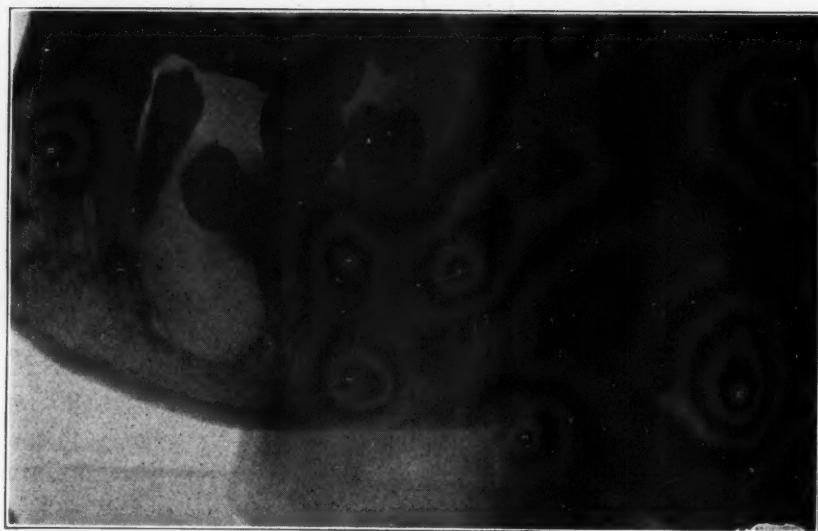


Fig. 2.

had retained a mandibular second deciduous molar past the average age for its loss. The tooth had been under my observation for some time. It had no caries and the condition of the surrounding tissues appeared normal. But one day he reported with what was then diagnosed as an acute alveolar abscess under the deciduous molar. He was referred to the family dentist

\*Read before The American Society of Orthodontists, Chicago, Ill., April 9-11, 1923.



who removed the deciduous molar, and found a large pocket filled with pus.

The presence of the premolar erupting out of line was located by probing and packing the pocket. The discharge continued for a number of months, the boy appearing only at irregular intervals, so systematic treatment could not be carried out. The premolar eventually erupted into normal position, the pocket closed and the discharge stopped.



Fig. 3.

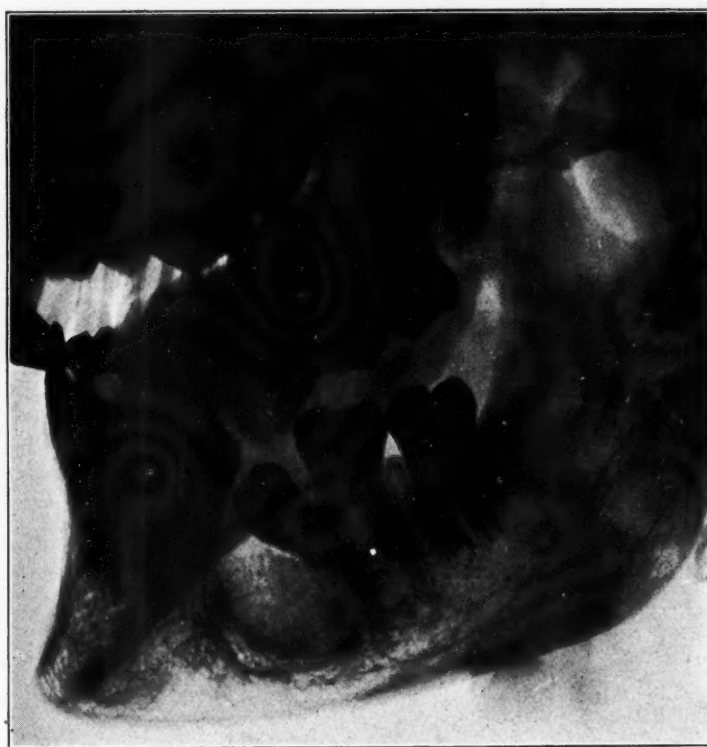


Fig. 4.

When the younger brother was brought to me for orthodontia treatment at twelve years of age the mandibular left second deciduous molar was still in place with a large occlusal cement filling, and a vital pulp.

A radiogram taken May 10, 1916, showed the second premolar deflected mesially and buccally with no evidence of any abnormal condition in the

surrounding tissues. Fig. 1 shows the model of the mandibular teeth with the deciduous molar in place.

To assist the eruption of the premolar and to avoid the possibility of an



Fig. 5.



Fig. 6.

occurrence similar to his brother's I referred him, with the radiogram, to the family dentist for the removal of the deciduous molar. The radiogram was lost, and as it was not taken with duplicate films no radiographic record of the case at that time was retained.

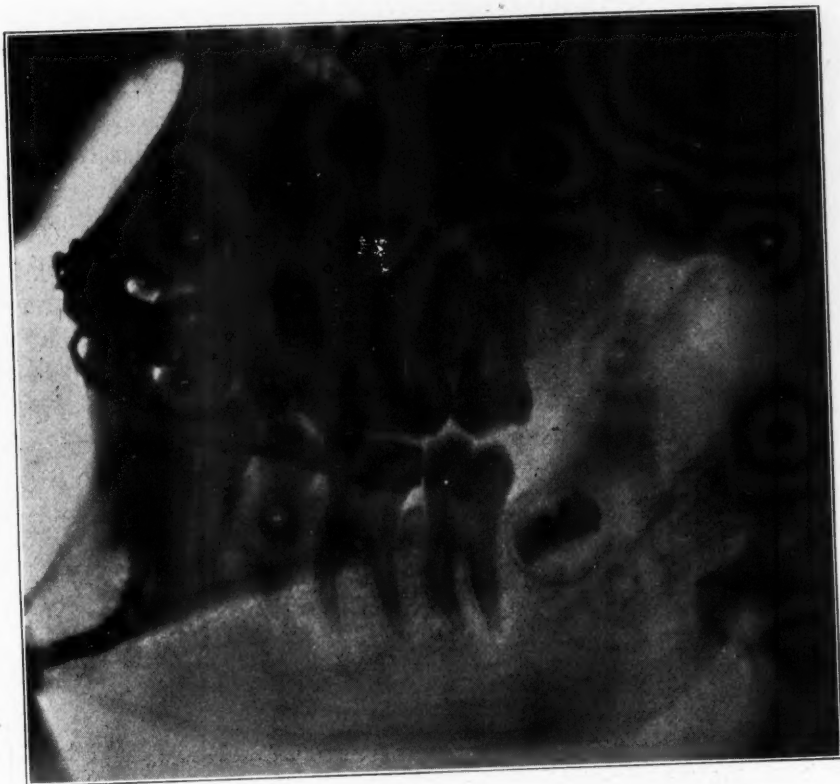


Fig. 7.

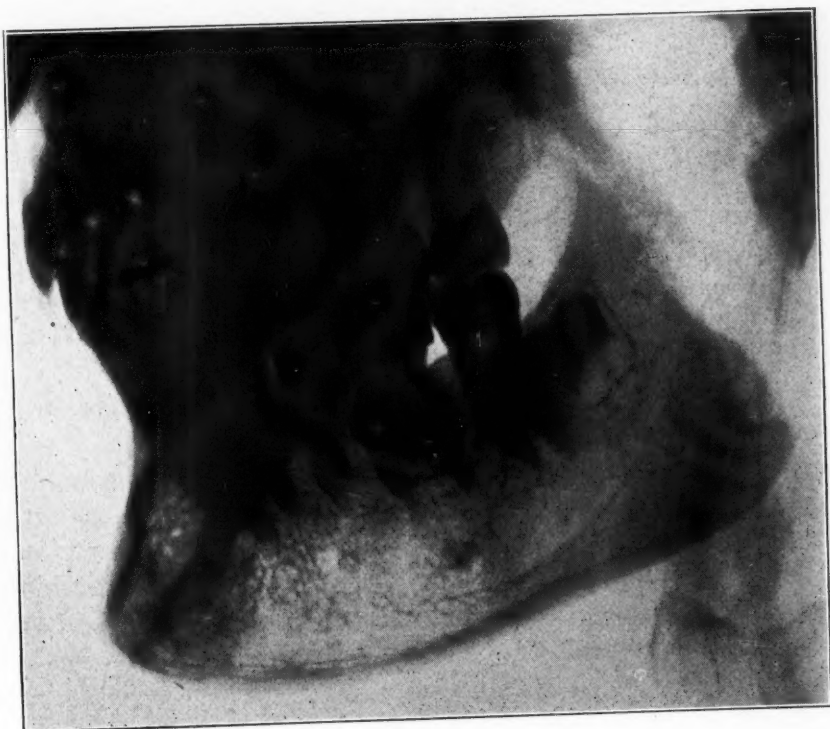


Fig. 8.

On May 18, one week later, healing had taken place and the orthodontia appliances were placed. Treatment progressed without apparent disturbance until June 4, twenty-four days after extraction, when he reported with extreme pain and swelling on the left side of the mandible. Fig. 2 shows the condition at that time, and Fig. 3 shows a view taken vertically through the mandible. Previous to this time no pain or disturbance of any kind had ever been experienced.

On lancing no discharge was secured, but the pocket was filled with a watery fluid which turned to pus in a few days. It was diagnosed as a cyst, was washed out with an antiseptic solution and the patient referred to the general practitioner for treatment, with the suggestion that the cyst be curetted and packed. This was not done, but it was washed out at frequent intervals, and the patient was referred to a bacteriologist who made an autogenous vaccine and administered about three injections, after which the discharge stopped.

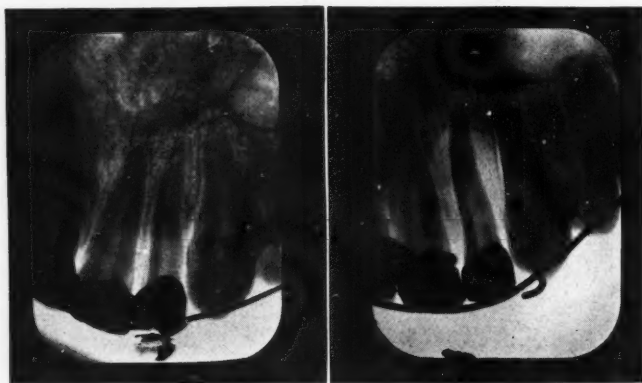


Fig. 9.

Orthodontic treatment was stopped June 4, and was started again about July 25, and continued without interruption. On the fifth of September he reported with swelling again and was referred to the bacteriologist who administered another injection of vaccine. Fig. 4 shows the condition on August 23, 1916; Fig. 5 shows the condition November 7, 1916; Fig. 6 on February 2, 1917; Fig. 7, the condition on May 15, 1918, two years later; and Fig. 8 shows the condition July 3, 1920, or four years after the case was started.

On October 3, 1917, the same patient developed what appeared to be an abscess in the neighborhood of the maxillary right lateral incisor. There was no pain but a large amount of swelling in the palatal portion of the mouth, lingual to the lateral incisor. After opening and washing out a number of times, healing took place. Fig. 9 shows the condition October 3, 1917, on the right, and May 28, 1918, six months later, on the left.



## CASE REPORT\*

BY BERNARD G. DE VRIES, D.D.S., MINNEAPOLIS, MINN.

I PRESENT five cases in the hope that the younger men may gain from them something that will assist in developing judgment in the diagnosis and treatment of several of the more unusual cases of orthodontia. Perhaps these cases have not been treated in the correct manner, but they were treated in a way that at the time I thought was correct, so I wish you to accept them with that in mind.

*Case 1.*—Miss A, aged thirteen years, had adenoids and tonsils removed several years ago. Mother says that protruding maxillary teeth were characteristic of an aunt, uncle and great aunt. They did not have receding chins

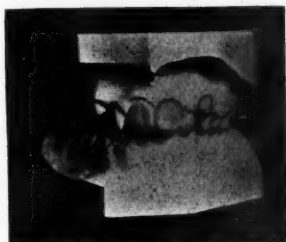


Fig. 1.



Fig. 2.



Fig. 3.

but teeth seemed to protrude. Over a year ago patient had "nerve killed" in maxillary left first molar. Present findings: Both mandibular first molars missing; mother says, "two mandibular second teeth were extracted a long time ago." Face has good lines, no recession of chin, small orifice. Radiograms reveal poor root canal filling in first molar and area at root ends.

**Treatment:** Left maxillary first permanent molar and maxillary right first premolar were extracted. Pin and tube appliance placed on maxillary arch and lingual appliance on mandibular arch. Spaces closed; maxillary second left molar moved anteriorly, maxillary canines moved posteriorly and articulation obtained as depicted by illustration. Treatment begun in August,

\*Read before the American Society of Orthodontists, Chicago, Ill., April 9-11, 1923.

1918, and appliances removed and second impressions secured in October, 1922.

The anterior view of the case is shown in Fig. 1. Note the canine impacted labially on the upper maxillary left side and also the partial impaction of the canine on the right. The left maxillary first permanent molar was abscessed. The mandibular first permanent molars had been extracted previously and the second molars had drifted forward. The face of this patient



Fig. 4.

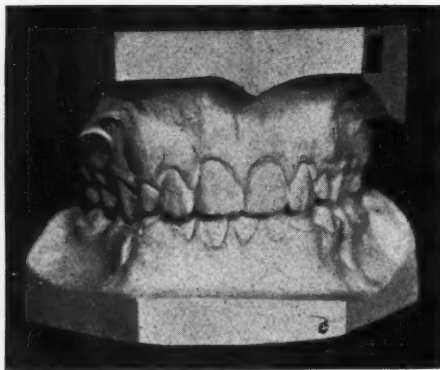


Fig. 5.



Fig. 6.

was what we might term a piquant one, small, with a pointed chin. The orifice and the head also were small. After deliberating on the case for some days I finally concluded on the following course of action.

On the right side I deliberately extracted the maxillary right first pre-molar. In the completed case you will see the occlusion which was secured (Fig. 2).

On the left side the extraction of the first permanent molar was indicated on account of the infection at the apex of the roots, so that tooth

was sacrificed. The two premolars were moved distally and the second molar brought forward into relation, and the canine dropped down into the position it now occupies (Fig. 3). Do not think that I advocate the extraction of teeth universally; far from it. However, this was one case which seemed to warrant such a procedure. The anterior views of the case before and after treatment are shown in Fig. 4.

Case 2.—Master B, aged ten and a half years. Mother is a trained nurse,



Fig. 7.

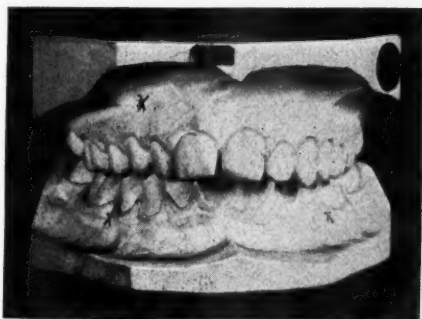


Fig. 8.

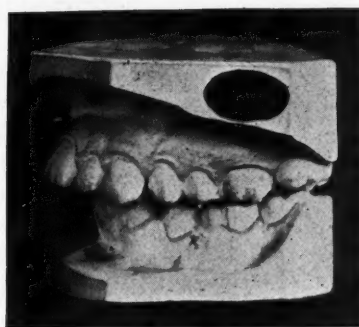


Fig. 9.

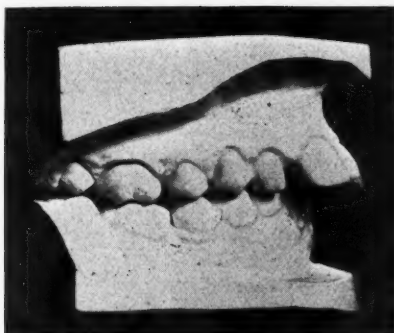


Fig. 10.

and the boy's teeth have always had excellent care. She did not know that anything was wrong with his mouth until a "new" dentist called it to her attention. Present findings: Mandibular right canine space entirely closed with deciduous first molar in contact with the permanent lateral. Teeth finely shaped and colored.

Treatment: On maxillary arch I applied simple expansion wire with usual spurs, attachments, etc. On mandibular arch I employed .030 labial

wire. The anchorage on the right first permanent molar consisted of band with horizontal buccal tube for reception of threaded end of wire. The anchorage on the left first permanent molar consisted of band with perpendicular buccal tube. Pins and tubes were used on the incisors and left canine. Treatment was begun in October, 1916; patient discharged Septem-

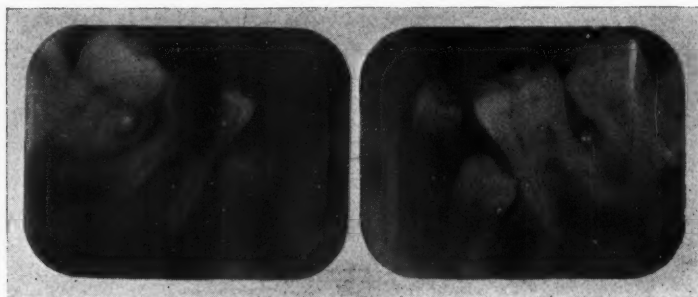


Fig. 11.



Fig. 12.



Fig. 13.

ber, 1918. This boy had the most beautiful teeth I think I have ever seen. Note the symmetry of the maxillary arch (Fig. 5). Another significant fact is that he had been under dental care for ten years without having the mother acquainted with the fact that the mandibular right canine was totally impacted. On the left in Fig. 6 is shown the arch as it appeared be-



fore treatment; note the rounding anteriors and the width. On the right hand is the maxillary arch after the requisite expansion was produced allowing the mandibular right canine to come in. At the left in Fig. 7 is the case before treatment. Note the overbite and the contact of the lateral with the first baby molar. At the right is the case after sufficient expansion.

*Case 3.*—Miss C, aged fifteen years. History: Tonsil, adenoids and turbinate operations just previous to appearance. Septum slightly deviated. Present findings: Maxillary and mandibular arches narrowed. Mandibular first permanent molars tipped mesially, also broken down. Radiograms reveal impacted maxillary right canine and both mandibular second premolars; deep overbite in anterior region.

Treatment: Applied maxillary and mandibular expansion wires in Jan-

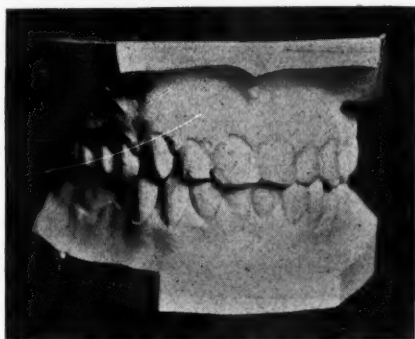


Fig. 14.

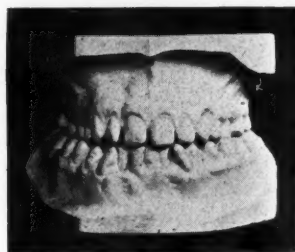


Fig. 15.



Fig. 16.

uary, 1916. Operated for impacted canine in May, 1916. In July applied lingual wires to maxillary and mandibular arches using rubber ligature to canine. In November, 1916, canine was well in view. Treatment continued until March, 1917, when patient was sent to her home in a neighboring state. Patient reported at intervals until January, 1919, when all appliances were removed; patient reported again in January, 1923, with occlusion as shown in Fig. 14.

This is a case with the total impaction of the maxillary right canine, and also of both of the mandibular second premolars (Fig. 8). In Fig. 9 is seen the left side showing impaction of the second premolar and the overbite. Fig. 10 is the right side showing contact of the lateral with the first premolar and the impaction of the mandibular premolar. Both molars are badly broken down. The radiograms revealing the position of the second premolars are shown in Fig. 11. In Fig. 12 is a series of radiograms de-

picting the position of the canine. Note the position of the lateral, the canine bearing against the root, the space created for the reception of the canine, the small attachment on the canine and the canine in place.

The comparison between the mandibular arch before and after space was made for the reception of the second premolar is shown in Fig. 13. The case after treatment is shown in Fig. 14.

*Case 4.*—Miss D, aged thirty-five. Although I do not advocate treatment of patients of such age, I thought this was a rather interesting case, and it gave me considerable pleasure in its treatment. When a young girl, the patient had both maxillary first premolars extracted in an attempt to correct a malocclusion of maxillary teeth. Several years ago extensive dental work was done in maxillary and mandibular molar regions, including large porcelain jacket crown on mandibular left first permanent molar. There is



Fig. 17.



Fig. 18.

total lack of anatomy in crown and inlay restorations. During the last few years the patient had noticed that mandibular teeth seemed to be coming forward more and more, and the chin seemed to become prominent. Treatment was commenced as for a mesiocclusion case with usual arches and intermaxillary ligatures, rotating bands, etc. After a year the case showed no progress in mesiodistal relationship, and it was decided to extract both mandibular second premolars. The six mandibular anterior teeth and first premolars were maintained in the arc, and spaces slowly closed. Treatment begun in Berlin in 1912 and patient left there in the summer of 1914 with retention in place. I saw the patient in Minneapolis, 1915, when second models were made. In 1916 all appliances were removed and the patient had dental restorations corrected. Patient has appeared for observation from time to time and occlusion and overbite seem very satisfactory. Remarks: Maxillary right central was devitalized during treatment.

The case is shown in Fig. 15. The first premolars had been extracted some years previously. Note the relation of the maxillary and mandibular arches. The mandibular left first permanent molar was a porcelain crown with absolutely no anatomy. The inlays in the molar teeth, both maxillary and mandibular, possessed no anatomic form whatever. Note the relation of the maxillary canines to the mandibular canines.

In Fig. 16 is shown the palatal and lingual view of the maxillary and mandibular arches. Note again that the premolars are missing, the congestion in the anterior region, the porcelain restoration on the mandibular first molar, and the lack of anatomy in the inlays on these teeth. They were practically plane surfaces.



Fig. 19.



Fig. 20.



Fig. 21.



Fig. 22.

In Fig. 17 at the left is the maxillary arch, after expansion had been produced, with retainer in place. After treating this case as a Class III for some time, the second premolars in the mandibular arch were taken out and these spaces were closed. (See Fig. 17, right.)

Fig. 18 depicts at the left the case in its original condition, and on the right the case after its completion. The latter model was made before the restorations were perfected in the mandibular teeth. Since that time her occlusion has naturally greatly improved.

In these cases, it seems to me, if anything at all is to be done for this type of patient it is necessary to procure at least canine relationship; and

an overbite adequate to maintain those teeth. As far as I know this mouth has been made very serviceable, and the appearance has considerably improved, although, of course, more might have been accomplished had she been younger.

*Case 5.*—Master E, aged sixteen years. History: Case is one of supernumeraries imposed directly in median line of maxillary arch. Treatment accomplished with pin and tube appliance. Treatment begun in 1915 and appliances removed in 1918.



Fig. 23.



Fig. 24.

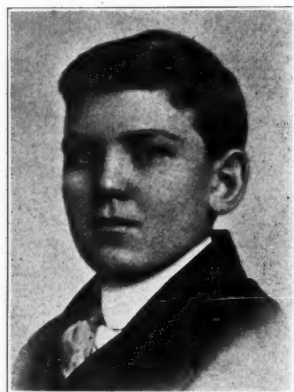


Fig. 25.

Figs. 19 and 20 show the case of two supernumeraries imposed directly in the median line. Fig. 21 shows the appliance in place some time after treatment was instituted.

Fig. 22 gives palatal view of the maxillary arch, showing the supernumeraries and also the two specimens which were removed. Note the peculiar morphology of those two teeth. The case just prior to retention is shown in Fig. 23. The full face view of the boy showing the overbite relation of the anterior teeth is given in Fig. 24. Fig. 25 is a picture of the lad taken two or three years after all the appliances were removed.



# DEPARTMENT OF ORTHODONTIC TECHNIC

Edited By  
H. C. Pollock, D.D.S., St. Louis, Mo.

## ELEMENTARY ORTHODONTIC TECHNIC

BY H. C. POLLOCK, D.D.S., ST. LOUIS, MO.

*(Continued from November, 1923.)*

### SOME PRINCIPLES OF TOOTH MOVEMENT

THERE are at least three distinct phenomena which are a result of the application of force for the movement of teeth, as regards the direction of movement and response of the tooth. By the application of force by one principle, the tooth may be tipped only, by another it may be tipped and moved bodily simultaneously, and by still another the tooth may be moved bodily, or parallel to its long axis. Accordingly, modern appliances are designed principally for one of these three types of movement; however, in some a combination of these types of movement may be secured. Quintero of Lyons, France, has aptly illustrated these principles (*International Journal of Orthodontia*, viii, 701):

“Example I.—If the power ‘P’ is applied to the crown of the tooth it will become displaced in a direction induced by the power. But it does not turn about an imaginary axis situated at the apex; fixed point ‘F’ will, on the contrary, be situated toward the upper third of the root and the last part of the root will form the resistance ‘R’ which is quite weak, moreover. This corresponds to the case in which the old type of expansion arches are used and the tooth acts like a lever of the first class. (Fig. 36-A.) P-Power. F-Fulcrum. R-Resistance.

“Example II.—Let us change the point of application of the power ‘P’ to the level of the necks of the tooth. At the same time we have made the fixed point ‘F’ move to the apex while the resistance ‘R’ will be formed by the entire length of the root and thus we have obtained a lever of the second class. (Fig. 36-B.) R-Resistance. F-Fixed point or fulcrum. P-Power.

“Example III.—Suppose that by skill in constructing the appliance we have changed the point of application of the power ‘P’ to a suitable part of

the root, then the entire length of the tooth will form the resistance 'R' and the fulcrum 'F' will be located at the end of the crown. If we have accurately calculated the height of the point 'P,' perfect equilibrium of the tooth will be established and displacements in mass or parallel equilibrium will occur, thus the tooth becomes a lever of the third class. (Fig. 36-c.) P-Power. R-Resistance. F-Fulcrum or fixed point."

Fig. 36 exemplifies the type of tooth response secured by the application of the labial arch wire used in conjunction with the simple ligature wire (Fig. 36-b). This principle is at least partially used in the application of forces by the lingual arch with its auxiliary finger springs. A resultant movement is obtained by the labial ribbon arch wire used in conjunction with the secure bracket attachments upon the teeth to be moved. This principle is also employed in other forms of root-moving appliances designed by Case and Angle in the past (Fig. 36).

The type of movement gained as illustrated in Figs. 36-a and 36-b has heretofore been referred to in discussions of the various types of labial arch wires, it being largely a tipping of the tooth.

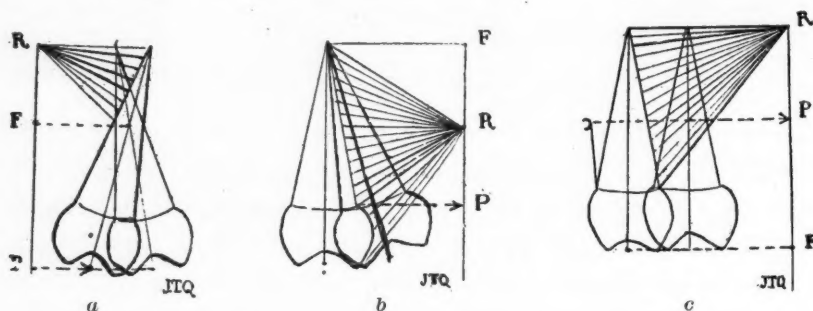


Fig. 36.—(Quintero.) Showing the various types of response exhibited by teeth as a result of mechanical pressure placed thereon, illustrating tipping of teeth and moving them bodily.

#### THE LINGUAL ARCH WIRE

Within recent years the lingual arch wire, along with its various modifications, has sprung into great popularity among many orthodontists in both the fixed and fixed removable types. These devices first attracted attention through the efforts of both Lourie and Mershon. It is said that Lourie used this type of appliance as a retaining device, later developing it into an active appliance for the movement of teeth and the complete correction of cases. He used it in combination with a delicate labial arch wire which took a position high up, gingival to the crowns of the teeth, small, delicate, vertical, springy projections being soldered at right angles to the labial wire, and taking their positions in contact on the labial surfaces of the teeth. It is said that Mershon made the lingual arch removable by adding the lingual lock and its modifications which had been used by Angle and Young for buccal attachments to the anchor bands. The lingual lock was used as a lingual attachment for the lingual wire, thereby making the lingual wire removable at the will of the operator.

Some of the advantages which may be pointed out for this type of appliance follows. It may be said that they are clean and can be removed easily for the convenient prophylactic care of the mouth. They are inconspicuous and eliminate largely the necessity for conspicuous bands on the anterior teeth. The bulk of the pressure being applied to the lingual surfaces of the teeth, development and growth of the dental arches in the buccal and labial directions are not interfered with during a period of treatment. From the standpoint of simplicity alone, these appliances are outstanding as well as for their absence of bulk. At the same time, they require no small amount of skill and experience for their satisfactory manipulation in the movement of teeth. They may be employed with practically no discomfort to the patient. The lingual appliance has been featured in a number of articles which have appeared from time to time in orthodontic literature. Some of the mechanical attributes may be further pointed out by excerpts from the writing of Mershon, who has been one of the principal advocates and originators of this device. (*International Journal of Orthodontia*, vi, 684.)

"The removable lingual arch is an arch wire of suitable size adapted to the lingual surfaces of the teeth. It is attached by means of a lock to metal bands cemented on the anchor teeth, usually the first molars, through which with its various auxiliary spring attachments stimulation is applied to the teeth causing developmental changes and tooth movement."

"With me, the lingual arch used removably has been and still is in the evolutionary process. I first used it in January, 1909. At that time it was used with round horizontal tubes soldered on the lingual surfaces of the molar bands with the distal end of the tube closed, and I am at times still using them. With this style of tube it was very difficult to remove and replace the arch wire. To overcome the difficulty, a round vertical tube was used locking the arch wire in the same manner as it is done today. The tendency with the tube thus used was to rotate the molar teeth even though the arch wire was extended well back on the molar band. When Drs. Angle and Young brought out the Young-Angle lock, using an elliptical vertical tube on the molar band, that helped to solve the problem, but the post would move in the tube and again it would cause the molars to rotate slightly. To overcome this I developed the half-round tube, which I used first in June, 1915, and have been using it on molar bands for the purpose of attaching the lingual arch ever since.

#### "DESCRIPTION OF THE LINGUAL ARCH

"The arch consists of one large main wire, a lock, of which the main wire is a part, and auxiliary springs. The lock is composed of a half-round tube, soldered to the molar band in a vertical position, a post which accurately fits the half-round tube soldered to the main arch wire, and a smaller wire, soldered to the main arch wire, passing under the half-round tube, locking arch in place; this latter we call the lock wire.

"The materials used in the construction of the main arch, the auxiliary springs, and the lock, the half-round tubes and posts are all alloys of gold

and platinum, which possess great spring, that is retained over a long period of time under stress, and can be readily softened and retempered again. Several of the manufacturers have produced alloys possessing these qualities.

"In selecting the material and sizes of wire, use the smallest possible variety of material and standardized sizes. For the main arch wire  $\frac{36}{1000}$  or No. 19 gauge B. & S. after long experience has been adopted; for the lock wire  $\frac{26}{1000}$  is the best size; for the auxiliary springs after many tests  $\frac{22}{1000}$  has proved without doubt the proper size. The half-round tubes I have used in many different lengths, but have at last decided on one size exclusive of all others, namely  $\frac{8}{100}$  of an inch. The half-round wire, which comes in six-inch or foot lengths, should of course always fit the tubes accurately. If it does not fit accurately, do not use it, as it will cause trouble later on.

#### "CONSTRUCTION OF THE ARCH

"The arch is constructed on a plaster model with molar bands which have been fitted to the natural teeth, with half-round tubes soldered to their lingual surfaces and transferred to the corresponding teeth on the plaster model. The main arch wire is then bent to conform to all the inequalities in the dental arch produced by the irregularities of the teeth, and should extend distally beyond the half-round tubes one-eighth of an inch. Slightly mesial to the tube we make a slight step in the wire by bending it first toward the gingiva, then again parallel with the gingiva. Place the arch wire very carefully in its correct position on the model and with a sharp instrument mark the arch wire opposite the tubes, then proceed to solder, free hand, the half-round post wire to the main arch wire opposite the marks, cutting it off the proper length for the half-round tubes. We now place one of the posts in the tubes. Should it not lie correctly on the model, remove the arch, and with two pairs of Dr. Young's pliers by grasping the wire on opposite sides it can be twisted to its desired position. Proceed with the opposite side in the same manner. Replace the arch with both sides in the tubes. Should any part of the arch stand off from the model, it can readily be brought to place by heating this spot to a cherry red, and while hot pressing it home with a suitable instrument and holding it there until it sets. The arch is again removed from the model and the lock wire is soldered to the main arch wire, just mesial to the post and bent to pass gingivally to the tube where it is cut off. The arch is now ready to be placed in the mouth.

#### "REPLACING THE ARCH

"Remove the anchor bands from the model and cement them on the teeth. In trying the arch in the mouth, grasp the arch on the left side in the region of the half-round post with a pair of How pliers, and place the post in the tube on the left side. The arch should lie in its proper position, with the half-round post on the opposite side parallel with the half-round tube (Fig. 2-A). Should it not, twist or bend the arch until it lies correctly. Remove the post from the tube on the left, then place the right side post in



the tube. If the post on the left side drops into place with the tube, then the arch is ready to be locked in place."

The instability of anchorage has obviously been one of the principal objections of many operators to the use of the lingual arch, it being said by many that it is most difficult on account of there being no fixed and secure attachments on the anterior teeth to stabilize the arch to control the movement of the anchor teeth. Mershon issues a word of warning in this regard. He says:

"There may be times when it will be necessary to band an anterior tooth or in some other way to stabilize the anchor teeth, but very seldom. If we



Fig. 37A.

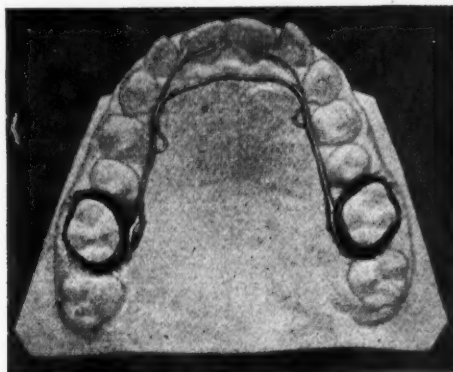


Fig. 37B.

Fig. 37.—(Mershon.) Showing the lingual appliance in position used in conjunction with the small delicate auxiliary springs of 22/1000ths.

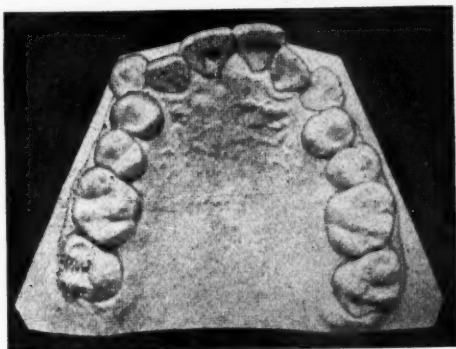


Fig. 38A.

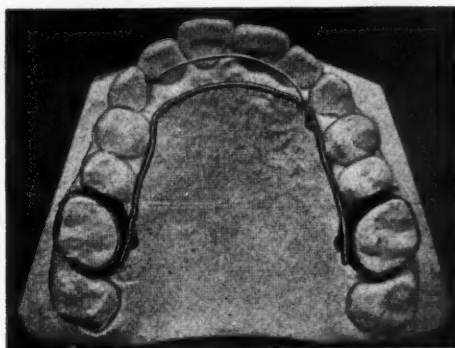


Fig. 38B.

Fig. 38.—(Mershon.) Illustrates the finger spring leaning against the lingual surfaces of the anterior teeth; by referring to A, then to B, the possibilities of correction with this simple yet constant and direct spring energy will be noted.

are interfering with our anchor teeth, it is evident we are applying too much pressure and undertaking to produce tooth change faster than development will take place. Almost every one in beginning to use the lingual arch applies too much force and adjusts the arch entirely too often."

A series of illustrations of Mershon's (Figs. 37-39) indicates the mechanical attributes of this device and its working possibilities.

Let us take as an example, the maxillary first bicuspid which frequently erupts with the lingual cusp rotated mesially (Fig. 39). "This is very easily

corrected by soldering a spring to the main arch opposite the approximal space between the first and second bicuspid. Bend the wire mesially, forming a half circle with the free end of the spring wire engaging the first bicuspid and applying pressure on the mesial surface opposite the lingual cusp. The same principle of attachment can be employed for moving teeth mesially or distally also for the purpose of opening spaces."

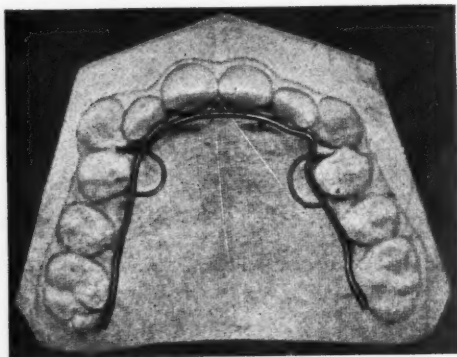


Fig. 39A.



Fig. 39B.

Fig. 39.—(Merzhon.) The auxiliary spring is most efficient for rotating teeth,—to produce rotation without banding the teeth.

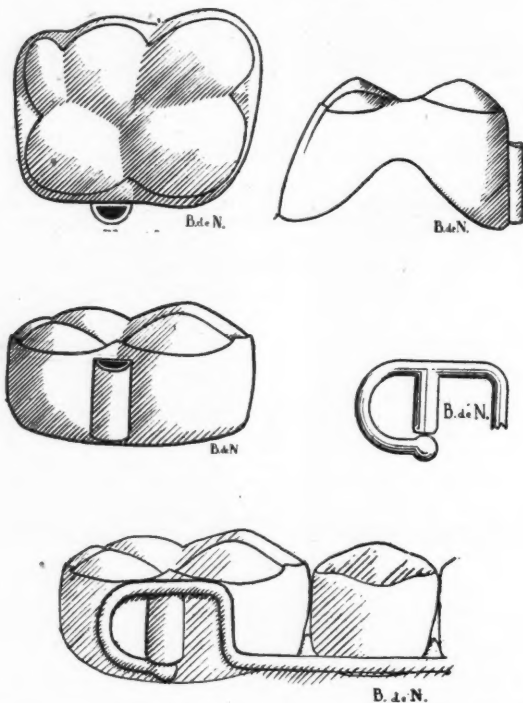


Fig. 40.—(Quintero.) Showing one of the more popular forms of lock nuts for the purpose of securing the lingual wire to place.

There have appeared from time to time various and sundry types of lock nuts designed for the purpose of securing the removable attachment for the lingual arch wire.

In Fig. 40, an illustration from Quintero, may be seen one of the more popular forms of lock nuts for the purpose of securing the lingual wire to

place. This lock is constructed by soldering a half round wire near the end of the main arch wire which fits exactly into the vertical tube on the lingual surface of the band. The free end of the arch wire, it may be seen, serves as a locking spring to secure the lock in place. By the use of the half-round vertical tubing in which is engaged the corresponding vertical member, a security of attachment is obtained which does not permit of play or rotation when carefully executed.

It is of interest to note in a paper read before the Pacific Coast Society of Orthodontists in regard to this appliance, Mershon said in his concluding remarks:

"Our problem is one of development; it is a study of growth and the functional forces of growth which control development; the teeth and their occlusion are an incident thereto. We are treating impaired function which results in defective development and we are erroneously endeavoring to do it artificially with a mechanical appliance.

"In recommending the removable lingual arch for this purpose, it is not to be considered a universal appliance, and is at times used in connection with the labial arch, especially in Class II and Class III cases. The mak-

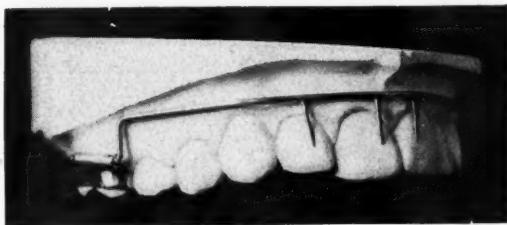


Fig. 41.—The Lourie high labial arch wire with spring extensions for the control of movement of teeth. (Lourie.)

ing and using of the lingual arch are most difficult, but it is a most efficient appliance if properly used. With the lingual arch and auxiliary springs we can apply a pressure to a tooth which approaches the normal growth force as closely as it is humanly possible to judge, so that we can produce development and tooth movement without destroying the harmony of function between the tooth and its supporting tissues."

The lingual arch wire in conjunction with the high labial arch wire as used by Lourie and described by Dewey, as shown in Fig. 41, consists of 19-gauge gold and platinum spur extensions, gold and platinum spurs of 22-gauge being used because this material possesses greater elasticity than does iridio-platinum. The advantages claimed for the use of the high labial wire in conjunction with the lingual arch wire are first that force may be distributed on the labial surfaces of the teeth simultaneously with the pressure being exerted upon the lingual surfaces, at the same time being executed in such a manner as to render the appliance inconspicuous and effective. In the practical use of the lingual arch and its modifications the wire stretching pliers are used to great advantage. The art of using the wire stretching pliers for adjustment of this appliance, however, is a highly tech-

nical procedure and is only mastered by the utmost pains and experience. For the mechanical technic of manipulation of wire stretching pliers used in conjunction with the lingual arch, the reader is referred to Dewey: *Practical Orthodontia*, 4th edition, p. 208.

The lingual arch, the short description of which appears above, has assumed a most conspicuous place in modern orthodontic technic, so much so, in fact, that many operators adhere to this type of appliance religiously, almost to the exclusion of all others in some instances. The immense popularity of this form of appliance becomes ample evidence that the operator desiring to perfect his orthodontic technic should, by all means, study the lingual arch wire in all of its phases as developed up to this time. It would

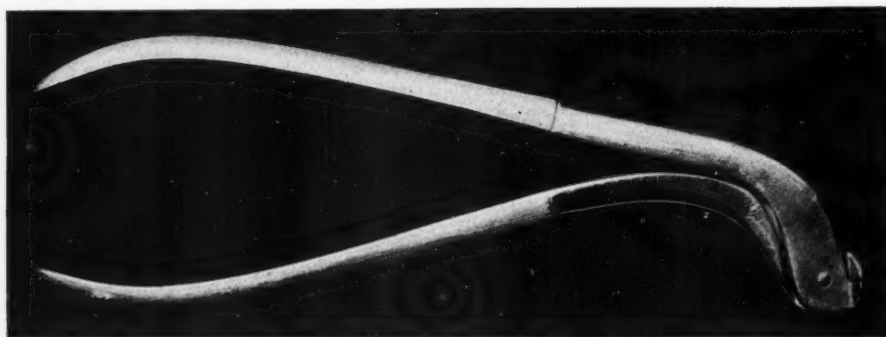


Fig. 42.—Lourie wire stretching pliers. (Dewey.)

appear to have assumed a permanent place as a necessary and efficient adjunct to modern orthodontic technic.

Case histories will follow in this series of articles in the future describing in detail the correction of cases using this form of appliance, and written by authors of wide experience in the technic of the lingual arch wire.

The modified wire stretching pliers and the one more popular for use for stretching the lingual wire appliance are shown in Fig. 42 designed by Lourie.

In this connection I would recommend the reading of Dewey, "*Practical Orthodontia*," 4th edition, p. 204, upon the question of lingual arches, to all not entirely familiar with the lingual arch technic.

It is worthy of note, and comment as well, that the men who originated this appliance and have perfected its technic have given it to the orthodontic profession without ties of any character, and well deserve great credit for this magnanimous spirit.

(*To be continued.*)



# DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Edited By

Clarence O. Simpson, M.D., D.D.S., and Howard R. Raper, D.D.S.

## THE RELATION OF THE RADIODONTIST TO THE PATIENT AS WELL AS TO THE PRACTITIONER\*

BY L. R. MAIN, D.D.S., SAINT LOUIS, MISSOURI

IN presenting a paper on this subject, I am mindful of how delicate is the situation at times between the radiodontist and the patient who is sent for information regarding the oral cavity. Sometimes in the hands of the very best men unpleasant circumstances will arise and mishaps occur, which can often be revealed by the radiograph, and in some instances these conditions are delicate indeed.

What is the relation of the radiodontist to the patient? Is his dealing with the public altogether advisory, or is he to handle the case with the interest of the patient uppermost in his mind? Are we merely to follow the recommendations of the physician or dentist who refers the average case to the radiodontist with advice to make an incomplete examination, when a complete and thorough examination and diagnosis is indicated?

Perhaps it is true that the x-ray is the most valuable asset we have to aid us in diagnostic work. If it is so valuable an asset, is the public receiving at the hands of the profession the information to which it is entitled, so that the vast amount of guess-work can be eliminated? Are we, as a profession, making use of the most potent factor at our command for the good of our patients? Does the thermometer of dentistry really register in the radiodontist's office?

Those who limit their work to oral diagnosis realize that radiographs travel all over the country, and not infrequently there are presented, for interpretation, radiographs which have been made in other lands. By close scrutiny we find that dental operations are performed very much along the same general lines wherever dentistry is practiced. I have come to the conclusion that dentistry is weakest today in its lack of appreciation of the value of diagnosis. This is where the public at large fails to receive the full benefit of the information which is ordinarily revealed by the radiograph. We still go ahead too

\*Read before the Third Annual Meeting of the American Society of Dental Radiographers, Cleveland, Ohio, Sept. 7-8, 1923.

frequently with our prescribing, when very little time is given to diagnosis, and consequently there can be no prognosis.

But what has this to do with the subject of the paper? Taking for granted that the office of the radiodontist is well established and understood, has he any responsibility to the patient who is referred for his services? Is he to act altogether on the instructions sent to him, when sometimes these instructions limit his usefulness to the patient to such an extent as to make his services of little value? The chief function of the x-ray is to enable us to practice rational dentistry, and of course, in most cases, thorough understanding of the whole mouth is essential. Is the x-ray consulted frequently enough to make our restorations practically free of apical disturbances? In the light of our present advancement, does the patient receive the benefit necessary in the average case referred for diagnostic aid?

Generally speaking, the radiodontist should be in a position to judge the extent of the examination necessary in a given case. His hands should not be tied by the practitioner stating to the patient, "This can be done on one or two negatives for a few dollars," when it is found that a further examination is essential.

It seems to me the pendulum of radical treatment in dental operations is swinging very far to the conservative column, and perhaps rightly so, but with this apparent swinging back has also come too much conservatism in the most important phase of our work, namely, not sufficient time and energy given to diagnosis. We see almost daily dental restorations of all sizes on so many questionable teeth, and many times these operations are performed on patients whose health is doubtful and symptoms indicate some foci of infection. Then are we to make a partial examination and subsequently incomplete diagnosis of the case and let it go at that? From the patient's viewpoint, should he go further? Again, when we know from our observations that a given tooth would ordinarily respond to proper treatment, but the dentist cannot take, or at least has not taken, care of similar cases before, is it fair to the patient to perhaps extract the tooth when possibly it could be saved?

We heard it said a few years ago that many people suffering from certain diseases had their teeth extracted on medical advice, without a thorough examination, hoping to eliminate their disturbances by so doing. It is said that many sound and useful teeth were needlessly sacrificed and that the dentist should be condemned who extracts teeth under such circumstances. I quite agree with this. Regardless of who advised such procedures, a real dentist should refuse to perform such an operation unless a thorough examination and diagnosis had been made, and he was convinced that it was a move in the right direction. Such care of the public is a thing towards which we should strive, and is a commendable attitude. But what is a radiodontist to do when for the good of the patient, he may have to disagree with the practitioner who desires a partial examination only? Is our first duty to the public or to the profession?

It seems to me, dentistry has made unusual strides in the last decade. Perhaps greater accomplishments have been realized than in any previous period. The restorations are finer in detail and more serviceable than ever before, and the profession indeed is to be commended on this, but I maintain

two things: first, that the greatest contribution to progressive dentistry is the radiograph, for it is the foundation stone upon which healthful dentistry must build. Secondly, that the general public is not receiving the benefit of the radiograph as an aid in diagnosis and prognosis to which it is entitled. In other words, our diagnosis has not kept pace with our mechanical skill. Too often the x-ray is a means of getting us out of trouble, instead of being used as the chief aid in keeping us out of trouble. We are still guessing too much.

I do not think that it is wise for the radiodontist to tell his findings to the patient unless requested to do so. I do claim in cases where insufficient and incomplete examinations are requested, especially when the symptoms of the patient indicate the possibility of some remote infection, or pressure on important nerves, that a frank conversation with the physician or dentist is necessary. If the teeth are suspected as a factor in ill health, the dental examination should be sufficient to eliminate all cause of doubt. From the patient's viewpoint, every root filling should be checked up and especially should every infected tooth which had been treated and where root fillings are made, be checked up in from three to six months to determine results. It is the duty of the radiodontist to impress this necessity on the dentist. The radiodontist is not a judge of dental restorations, but he should insist on the elimination of oral sepsis and sufficient use of the radiograph to make present dental operations practically free of apical involvements.

Another evidence of not sufficient thought given by the profession at large to the advantages of the x-ray as an aid in diagnosis, is that there is rarely ever any mention made of the radiograph in State Board examinations. The other day I read the State Board questions asked in seven state examinations and one list from the Dominion of Canada, and there were only three questions asked pertaining to the x-ray (1922; Canada, West Virginia, Texas, Pennsylvania, Kansas, 1 question, Alabama, 1 question; 1923; Texas, 1 question, California). I would like to suggest that since the radiograph has done so much to revolutionize old methods of practice it should be considered by state examiners of prime importance to the graduates. This would impress upon them at the beginning of their practice that the public is entitled not only to the best of their mechanical skill, but that they should be sure their efforts are not in vain by doing restorative dentistry on teeth which are uncertain.

I want to state that our first duty is to the patient. It is from them we exact our livelihood, and our recommendations should be made to the practitioner so as to give to the patient the benefit of every doubt. If in our check-up work we are led to believe that teeth affected to a certain degree in a fairly healthy individual do ordinarily respond to treatment, we should pass that information on to the profession in our report. There will be little or no progress made in conservative dentistry if our reports are colored by our knowledge of the inability of the operator. We should, as individuals, maintain the highest standard of radiodontic service. This will mean a great deal of telephoning on our part, calling the attention of the practitioner to the necessity of a thorough examination. Sometimes, but not often, it is a question of finance with the patient, but this should not interfere with doing our full duty in every case.

I should like this society to call the attention of the State Boards of the country to the fact that radiodontic work is not sufficiently emphasized in the examinations, and I hope that the influence of this society may be so enlarged that it will impress itself upon every department of dentistry, as radiodontia must precede almost every step taken in progressive and healthful dentistry.

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## THE TECHNIC OF ORAL RADIOGRAPHY

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BY DR. CLARENCE O. SIMPSON, ST. LOUIS, MO.

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### REGIONS IN DETAIL (Continued)

#### **Mandibular First Molar Region**

(Continued from page 876.)

*Position of Head.* Reclined sufficiently for the occlusal plane of the mandibular teeth to be horizontal when the film holder or retaining finger is in place.



Fig. 1.—Position of film packet and holder for the mandibular first molar region.

*Vertico-horizontal Angle of Projection.* Ten degrees below horizontal.

*Modifications.* Fifteen degrees below horizontal where there is a marked buccal inclination of the teeth, or the roots are unusually long. Five degrees below horizontal where there is an abnormal lingual inclination of the teeth, or the roots are exceptionally short.



*Mesio-distal Angle of Projection.* Parallel with the mesial surface of the first molar.

*Modification.* Compensation for a marked malposition of the teeth.

*Placement of Film Packet.* Longer dimension horizontal. Lower mesial corner slightly bent. Film holder attached at the center of the upper side. Place packet to include the first premolar, and extend distally to the length of the packet; occlusally to include the cusps of the teeth in symmetrical relation to the side of the packet at the angle of projection.



Fig. 2.—Position of patient and cone for the mandibular first molar region.

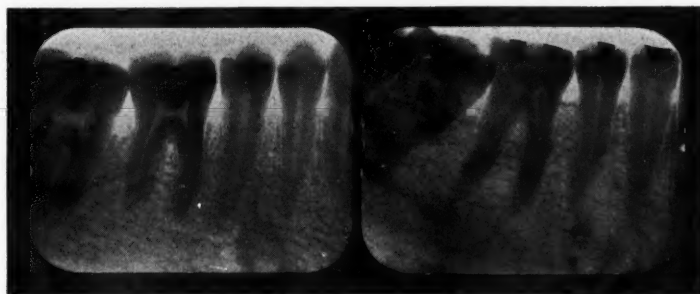


Fig. 3.—Typical views of the mandibular first molar region.

*Retention of Film Packet.* Firm pressure of the teeth on film holder, or first finger of patient's opposite hand on the film holder or near the lower mesial corner of packet when the loss of teeth prevents biting on the film holder.

*Cone.* Centered midway the mesial root of the first molar.

*Spark Gap.* 4 to 4½ inches.

*Exposure.* 90 to 120 milliamperere seconds at an 18-inch target film distance.

*Explanatory Description.* The mandibular first molar region generally presents the least difficulty of any in an intraoral examination. The plane of the film packet is approximately parallel with that of the teeth, making the angle of projection especially constant. Where conditions permit, the use of film holder eliminates most of the difficulty in placing and retaining the packet.

It is desirable to examine the first molar exclusive of the second and third,



Fig. 4.—A case in which conditions permit a view of the second molar in examination of the first molar region, and another in which the second molar is only partially shown.



Fig. 5.—A set of film holders designed by Dr. Raper, which are indicated in the examination of mandibular molar regions.



Fig. 6.—Ordinary wood film holders, the upper surfaces of which have been sawed diagonally to better conform to the bite in examination of the mandibular molar regions.

because the bucco-lingual axes of the three molars are normally not parallel and they cannot be viewed to the best advantage with a common mesio-distal angle of projection. The most satisfactory view of the first molar is obtained by a mesio-distal angle of projection parallel with the mesial surface of the tooth, which discloses the lamina dura, the contour of the proximal surfaces, the pulp chamber, and both roots. This is also the normal view of the premolars which are included, and supplies some information about the second molar by a diagonal view of that tooth.

## ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

**Mouth Symptoms of Acute Lymphatic Leukemia.** S. L. Rosenthal (Chester, Pa). *The Dental Cosmos*, March, 1923, lxxv, 3.

Acute lymphatic leukemia, regarded as an incurable affection should be of interest to the dentist by reason of its oral symptoms, which in certain cases might lead to its recognition. These symptoms are rather numerous. Since there are hemorrhages into the skin and mucous membranes there may be bleeding somewhere in the buccal cavity. This is, of course, favored by the congestion and venous stasis sometimes present, and also by stomatitis but aside from these conditions there may be oozing from the mucous membranes. In a personal case the author mentions unprovoked nosebleed. Blood may ooze from the gums either spontaneously or on pressure. Some one or more of the salivary glands may swell and in addition there is enlargement of the submaxillary and submental lymphnodes. The tongue does not seem to participate much, and this is true also of the mucosa of the cheeks and palate. The lips may be edematous or merely congested, the gums are hyperemic and swollen and bleed freely. The teeth are unaffected, for this mouth complication is acute in character. Stomatitis is only an occasional complication. The breath is fetid. The patient who is most apt to be young and a male has an anemic look. The tonsils in this affection are usually hypertrophied. In a doubtful case the dentist can have a blood test made for the sake of diagnosis, and if leukemia is present the patient should be referred to a physician at once.

**Shall a Dentist Testify Against Another Dentist?** M. S. Calman. *Dental Outlook*, September, 1923, x, 9.

The question may be answered both affirmatively and negatively. Under all ordinary circumstances, when the dentist is properly qualified to practice, and when the lawsuit originated in an attempt to overreach him on the part of the patient, it is inconceivable that one dentist should appear against another as a voluntary witness. Conditions are very different if the accused dentist is an illegal practitioner, unqualified or unscrupulously engaged in unethical

work. But even in these cases it may be best to communicate with the accused before taking any steps to go on the stand, and give him an opportunity of settling with the patient. The above is not concerned with expert testimony. It usually happens that after suffering at the hands of an unqualified or unscrupulous dentist the patient visits a qualified man and, having obtained his opinion, may later summon him without his knowledge or consent as a witness. In a case cited by the author the unqualified man was an employé of a qualified dentist, and the latter was responsible for the poor workmanship and injury to the patient. The lawyer retained by the latter employed a dentist to examine the patient, and upon his report the accused dentist was given a chance to compromise the matter, but took this in ill part, daring the other to testify against a brother dentist.

**Actinomycosis of the Cheek.** Lhironde (Paris). *La Revue de Stomatologie*, September, 1923, xxv, 9, page 520.

Despite its origin in the teeth actinomycosis is seldom reported in dental journals and doubtless few dentists are familiar with its appearances. The patient was a peasant woman who presented herself at the St. Louis Hospital for swollen right cheek and gave a history of repeated dental abscesses in the right upper jaw. These broke into the vestibule with immediate relief. After some time a nodule of the dimensions of a lima bean appeared in the right cheek. A latent period was followed by acute lighting up of inflammation and edema. The eyelids closed and the suggestion was of erysipelas. The swelling developed about two teat-like prominences which later discharged pus, leaving two fistulous openings. A firm tumor the size of an English walnut was palpable, surrounded with a zone of edema. The jaws were not at all locked and the mass was seated in the substance of the cheek. There were carious teeth in both upper and lower jaws. The inflammatory phenomena had by this time subsided. Asked if in the habit of chewing straw she only recalled the habit of nibbling grains of wheat. By excluding all other conditions the diagnosis was narrowed to actinomycosis or suppurative adenitis, and the unfortunately negative result of the microscopic examination decided for the latter. It was believed to be secondary to the osteoperiostitis mentioned above. A fourth attempt at bacteriologic diagnosis, however, was successful, and the characteristic rays of actinomycosis were found. The first upper molar of the affected side was now extracted as the probable source of the contamination. The lesion subsided under potassium iodide.

**Influence of the Endocrine Glands Upon the Dentition.** N. W. Janney (Los Angeles). *The Pacific Dental Gazette*, October, 1923, xxxi, No. 10.

Hormonic dental signs, so-called, may be general or special. The influence of carbohydrate diet and bacteria in producing caries is still problematic. There remain for study the metabolic, hormonal and vitaminic factors. The objections to a high carbohydrate diet have never been metabolic in character



but are based solely on the possibility of intraoral decomposition of carbohydrate residues between the teeth. Regarding the food requirements of the teeth, the latter must receive especially protein, calcium and phosphorus, while vitamines of some kind must also be present in the diet. In animal experiment deficiency in any of these ingredients may be seen to be productive of the most serious dental changes. The vitamin content should include especially vitamin A (there is no allusion in this connection to the newly discovered vitamin D.) Passing to the endocrines we know that the thyroid hormone is necessary for the development of the teeth, while the parathyroids from their rôle in calcium metabolism also stand in the same relation. Parathyroid insufficiency is a very rare clinical condition, so that the subject may be dismissed. The pituitary gland is known to play an important rôle in the development of the teeth, but in acromegaly and gigantism the teeth often show no overdevelopment although the jaws are greatly overdeveloped. In acromegaly the teeth are excellent and very resistant to caries, and in some unusual cases of gigantism the teeth share in the enlargement of the bones. In hypopituitarism the teeth are affected, and while the central upper incisors may be well developed, the laterals, canine and lower incisors are all small. The lower incisors are crowded together as if the mandible were underdeveloped. Castrates seem to have well developed teeth free from caries, just as the long bones also show overdevelopment.

**Necessity for Cooperation Between the Different Branches of the Medical Profession.** J. S. Fraser (Edinburgh). *The Dental Record*, September, 1923, xliii, 9.

The author quotes Sir James Mackenzie who would evolve a sort of super-general practitioner capable of recognizing the initial stages of all disease, leaving to the specialist only the more advanced phases. This would doubtless prevent some error, and the author recalls that when in general practice he applied atropine to a glaucomatous eye and blinded his patient. The average practitioner could never attain great mastery of diagnosis. Medicine has gone through three distinct stages—the religious, commercial and professional, and doubtless continues to slip back at times into the first two stages. Regarding specialism, it is evident that the best men should devote themselves to this and consultation alike, and that these classes should be favored in other ways—the specialist should have independent means, for one thing. He ought to be able also, to continue his original investigations in the laboratory, work from which the general or family practitioner is quite debarred. The hospital supported by voluntary contributions will have to go sooner or later, and be replaced by the endowed institution. Then the personnel of the hospital will change to whole time teachers and professors. A compromise course would be limited whole time service. If after five or ten years the incumbent is forced out, his private means will make it unnecessary for him to fall back into a private practice. He can still continue his research in his own laboratory, if necessary. Group medicine and the diag-

nostic clinic is a practice that enables the middle class patient to obtain full medical value at costs within his means. In time every group of patients will have some special service at his disposal in which prevention will be the watchword. These subdivisions will be adapted to certain ages—the unborn child, the young child, the school child and so on. The adult will be looked after by Health Insurance and Life Extension Institutes.

**The "Closed Mouth" Examination.** M. Polet (Brussels). *Annales Belges de Stomatologie*, October, 1923, vi, 4.

The author refers to the special advantages before proceeding to the inspection of the buccal cavity which accrue from a thorough investigation of the teeth, gums, etc., with the jaws tightly closed. Many facts may be brought out in this manner. Caries is especially apt to develop in the interdental spaces and the author is able to detect a large number of cavities before the jaws are parted at all. Pyorrhea is readily recognized from its predilection to attack the front teeth and from the associated malocclusions and malpositions which predispose to its development. It is, therefore, possible at times to foresee its development and prevent it. The gums and mucosa of the cheeks can readily be examined and the author has sometimes quickly recognized the presence of epulis. Since much prosthesis is for cosmetic effect, and hence is limited largely to the front teeth, it is easy to apprehend the condition of the prosthesis.

In routine dental practice the patient at once enters the chair and is placed in the proper position for examining the entire arches of teeth; but from the analogy of the work of other specialists, as the rhinolaryngologist, there should first be made an external examination. The routine of the dentist resembles that of the gynecologist, who is supposed to examine the vulva before proceeding to use the speculum or finger in the vagina. This he very seldom does, however, and the predicament of the dentist is the same. Doubtless the dentist should go back even further in his examination and inspect the face and jaws without the patient opening his lips at all. In this way several points might be determined in advance by inspection or palpation.

# The International Journal of Orthodontia, Oral Surgery and Radiography

PUBLISHED THE FIFTEENTH OF EVERY MONTH BY

THE C. V. MOSBY CO., 801-809 Metropolitan Bldg., St. Louis, Mo.

**Foreign Depots**—*Great Britain*—Henry Kimpton, 263 High Holborn, London, W. C.; *Australasia*—Stirling & Co., 317 Collins Street, Modern Chambers, Melbourne; *India*—"Practical Medicine," Egerton Street, Delhi; *Porto Rico*—Pedro C. Timothee, Rafael Cordero 68, San Juan, P. R.

**Subscription Rates**.—Single copies, 75 cents. To anywhere in United States, Cuba, Porto Rico, Canal Zone, Mexico, Hawaii and Philippine Islands, \$6.00 per year in advance. Under foreign postage, \$6.40. Volume begins with January and ends with December of each year.

**Remittances**—Remittances for subscriptions should be made by check, draft, postoffice or express money order, or registered letter payable to the publishers, The C. V. Mosby Company.

**Contributions**—The editor will be pleased to consider the publication of original communications of merit on orthodontic and allied subjects, which must be contributed solely to this journal.

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**Communications**—Contributed articles, illustrations, letters, books for review, and all other matter pertaining to the editorial department should be addressed to the Editor, Doctor Martin Dewey, 501 Fifth Ave., New York City. All communications in regard to advertising, subscriptions, change of address, etc., should be addressed to the publishers, The C. V. Mosby Company, 801-809 Metropolitan Building, St. Louis, Mo.

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Entered at the Post Office at St. Louis, Mo., as Second-Class Matter.

## EDITORIALS

### The 1923 Meeting of the American Dental Association at Cleveland

THE 1923 meeting of the American Dental Association has passed into history as one of the largest ever held, as it had a registration that exceeded by two thousand and eight hundred that of any previous meeting. The present membership is nearly thirty-four thousand.

Probably one of the most important things done by the House of Delegates was the raising of the dues of the Association to \$4, beginning with the next fiscal year. This may seem a small sum; nevertheless, when one realizes that the dues were raised just one hundred per cent, the action may be considered very radical. There is a question in the minds of some men re-

garding the wisdom of doubling the dues without giving the members any added benefits, and without allowing the matter to be brought to the attention of the membership of the component societies. In the October issue of the *American Dental Journal* there appears an editorial in which it is stated that the resolutions to increase the dues of the American Dental Association (one hundred per cent) passed the House of Delegates by unanimous vote at the second session of the Cleveland meeting. However, the editorial fails to state that this resolution was brought up at a time when, according to the published order of business, it could not come up for action. Each member of the House of Delegates was provided with a published order of business, and the order for the second session did not include the amendments to the Constitution or the By-Laws as part of the business. Therefore, the passage of the motion raising the dues is contrary to parliamentary law and consequently unconstitutional and illegal. While it is true that the motion passed without a dissenting vote, it was by no means by unanimous consent of the delegates present. A great many of the delegates were deceived, owing to the fact that the published order of business did not call for changes of the Constitution and By-Laws at that session. The resolution was presented by the chairman of the Committee on Changes of the Constitution and By-Laws, and a vote was taken by the chairman of the House of Delegates at the time when many of the delegates did not know what was occurring. In fact, some of them understood that it was only being introduced as a matter of business for future consideration, for shortly after the vote had been taken one of the delegates asked, at what time the question of raising the dues would come up for passage. The chairman informed the delegate that it had already been passed by unanimous vote. However, in accordance with parliamentary rules of order any resolution which passes a body by unanimous vote can again be called up for reconsideration before anything has been done to change the status of affairs. Consequently, at the next meeting of the House of Delegates, a member moved the question of raising the dues be reconsidered. The motion was seconded. Very much to the surprise of a large number of the delegates, who were familiar with parliamentary law, the chairman of the House of Delegates did not recognize the second, and ruled the maker of the motion out of order. Therefore, while it is true that the question of raising the dues one hundred per cent passed without a dissenting vote, it is not true that it passed by unanimous consent. It is our belief that if the chairman had allowed the matter to come up for reconsideration, the motion would never have passed.

The objection proposed by many of the delegates was that the dues at that time were as high as they could be without losing a large number of the members of the local societies. Besides, the doubling of the dues does not give the members of the local societies any more benefits than they have been getting previously for two dollars. The four-dollar dues, according to the editorial in the *American Dental Journal*, is to be expended as follows:

“Two dollars for general expenses in the Association for the publication of the Journal as has been the custom in the past. [This is what every member has received, will continue to receive, and he will receive no more.] The



remaining two dollars which is paid by the general membership is to be apportioned to dental research, dental education, a dental library and dental relief, as follows:

"One-third to research, one-third to education, one-sixth to library, one-sixth to relief."

The question of dental research in the American Dental Association has always been something about which the less said the better. The research commission has spent money lavishly, and the results obtained up to the present time do not amount to one iota, so far as scientific dentistry is concerned. Such advances as have been made in the past in dentistry have been the result of individual workers who have labored outside the fold of the Dental Research Commission. In fact, the majority of the practitioners have been forced to forget a great many of the things suggested by the commission, because the findings have not worked out in the hands of majority as they have in the minds of the research worker. A great amount of money has been spent for various researches; different sums have been voted to individuals and institutions, and the returns have not justified the expenditure. At the present time many members of the American Dental Association are not in sympathy with the National Research Commission and the manner of the making of its "grants." Dental research has not been a success and will not be a success under the present plan of making grants, because research workers are born, and not appointed. If you will notice in an editorial in the *American Dental Journal* regarding research, the writer states that "It matters not how much has actually been accomplished to date by our researchers receiving grants from the Research Commission." This statement is practically an admission that they are trying to offer an excuse for the large amount of money that has been spent, and the small amount which has been received in return.

The good to be derived from the money spent for dental education is also problematic. We greatly doubt whether, after the years of activity of the National Educational Council, dental education is any more efficient in training dentists to serve the public than it was ten years ago. We contend that any advances that have been made in dental education have not been the result of money spent by the American Dental Association; we also question the ability of the Association to influence education.

The founding of a dental library is a very commendable feature, but "Where is the library going to be placed?" We fear the question of the dental library will be very much the same as was that of purchasing a building for dental research. A successful library requires more than a certain amount of money with which to purchase books, especially when there is no place to house them. If the location of the library is known to the Board of Trustees, at least it was not revealed to the House of Delegates at Cleveland.

The *American Dental Journal* editorial reveals the fact that it is planned to spend \$10,000 annually for a library, and an all-time librarian, but not a word is said regarding where this wonderful library is to be located. It seems to us that one of the most important things about the matter has been left

unconsidered. This, probably, will be taken care of when another one hundred per cent raise in dues is "railroaded through" the House of Delegates.

One-sixth of the increase is to go for relief of aged dentists. It is our belief that the dental profession would be much better off if the entire increase were devoted to dental relief.

We believe every member of the American Dental Association can afford, and is willing to pay, this increase in dues, but we object to the manner in which it was "put over" in the House of Delegates, and the way the chairman ruled the motion for reconsideration out of order. If the American Dental Association desires to limit its membership, as suggested by some at Cleveland, and to become an autocratic society, one way to accomplish it is to follow the tactics employed at Cleveland. We believe the association has a great future, but we also believe that that future can best be served by making the organization a democratic institution, where every member of the House of Delegates is allowed to voice an opinion according to parliamentary law, and where the officers will follow the published order of business, and will not allow the passage of amendments at a time when they cannot legally be brought up. The increase of dues is now a matter of record; therefore, it becomes compulsory for every local society to raise its dues, or so to adjust its affairs that it may be able to pay the American Dental Association twice the amount formerly paid. The local societies as a whole will undoubtedly do this, but we are fearful of the effect that this procedure will have on the membership in many localities. If the American Dental Association is to be what many of us wish it to be, its dues must be so regulated and its affairs so conducted as not to cause men to resign because of the way the business is transacted. The wisdom of raising the dues is yet to be proved. Instead of being an action to be commended, it is one to be regretted.

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#### Orthodontia—Another Step Forward

THE legislature of the state of Michigan has appropriated twenty-one million dollars during the past four years for the benefit of its University. Twelve million of this sum has been spent for teaching and research, and buildings costing nearly as much are now under course of construction on the campus.

The University of Michigan is accomplishing some astonishing things, and as President Burton of the University has stated plainly, it is achieving some "discreetly spectacular" things. In making these remarkable steps of progress, we are pleased to note that the institution has not forgotten its department of dentistry or the special fields in dentistry.

In addition to many other improvements, a department of orthodontia has been established under the leadership of Dr. Leroy Johnston, formerly of Boston. We cannot believe that this accomplishment is a part of the "discreetly spectacular" described by President Burton, but the creation

of a one year course in orthodontia in a large university at this time may, at least, be called commendable and significant. The fact that it is being sponsored by a tax-supported university removes one of the great barriers in the way of the establishment of postgraduate courses in orthodontia, which might consume many weeks of time, namely, the economic question involved in the proper and complete training of thoroughly equipped orthodontists.

The president of one of the greatest and largest educational institutions in this country speaks of orthodontia as "that new and wonderful science making such rapid progress as a department of dentistry." This alone is significant, as it indicates that the specialty is making progress as a scientific specialty.

Not only has the University of Michigan inaugurated postgraduate courses in orthodontia, but it has also included: Oral Surgery and Conduction Anesthesia, Preventive Dentistry and the Treatment of Pyorrhea Alveolaris, Metallurgy, Operative Dentistry, Crown and Bridge work and Prosthodontia, in its advanced work leading to the degree of Master of Science.

The following is quoted from the bulletin of the dental department:

"Only those graduates may be admitted who have made good records during their collegiate career, and it is expected that the grade of work for the degree of Master of Science will be of higher order than that required for the degree of Doctor of Dental Surgery. The work offered in the subjects stated includes the latest developments of each subject, and is arranged by a competent committee that will study the applicant's education so as adequately to prepare for specialization in practice.

"This is especially true in the courses in oral surgery and orthodontia. It is generally agreed that the dental course leading to the degree of Doctor of Dental Surgery does not adequately prepare for these two comparatively newly developed practices. Both require much of the instruction that has not been included in the dental course and which is given to the student of medicine."

The orthodontia course in the University of Michigan must necessarily be more or less of an experiment. However, those who have been responsible for its inauguration have taken one of the greatest steps for the advancement of this science, and for its further appreciation as a corollary science in the University. It is a most commendable action.

—H. C. P.

## **ORTHODONTIC NEWS AND NOTES**

### **Southwestern Society of Orthodontists**

The Fourth Annual Meeting of the Southwestern Society of Orthodontists will be held in Waco, Texas, at the Hotel Raleigh, Thursday, Friday and Saturday, January 24, 25 and 26, 1924. Arrangements are being made that will assure a good program. All those interested in orthodontia are cordially invited to attend. Please notify Dr. P. G. Spencer, 1408 Amicable Bldg., Waco, Texas, and reservation will be made for you.

### **The American Society of Dental Radiographers**

The mid-winter meeting of the American Society of Dental Radiographers will be held at the Drake Hotel, Chicago, Ill., January 15 and 16, 1924, Tuesday and Wednesday. The program committee is arranging an exceptionally good program.—Dr. Arnott A. Moore, President, 131 Allen St., Buffalo, N. Y.; Dr. Martin Dewey, Secretary-Treasurer, 501 Fifth Ave., New York, N. Y.

### **New York Society of Orthodontists**

In order not to conflict with the meeting of the American Society of Orthodontists which meets in Kansas City, Mo., March 18, 19, 20 and 21, 1924, the Annual Meeting of the New York Society of Orthodontists has been advanced two weeks and will be held Wednesday afternoon and evening, February 27, 1924, at the Hotel Vanderbilt, Park Avenue and 34th Street, New York, N. Y.—Wm. C. Fisher, Secretary, 501 Fifth Avenue, New York, N. Y.

### **Notes of Interest**

Dr. Arthur H. Jones wishes to announce the opening of his office, 807-14 Carleton Bldg., St. Louis, for the practice of dentistry.

Dr. Lionel Hartley announces his removal from 55 West 39th Street to 452 Fifth Ave., at 40th Street, New York. Practice limited to orthodontia.

Dr. James T. Walls announces that he will limit his practice to orthodontia and children's dentistry, up to 13 years of age, Suite 216-217 Medical Bldg., Portland, Oregon.

Dr. Felix A. Racette announces the removal of his office from Pau Pau, Michigan, to 804 Hanselman Bldg., Kalamazoo, Michigan. Practice limited to orthodontia.



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JAN 2 1924

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Vol. IX

DECEMBER, 1923

No. 12

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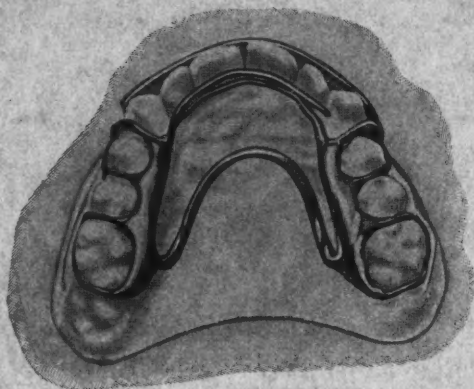
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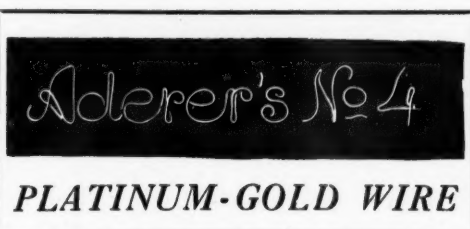
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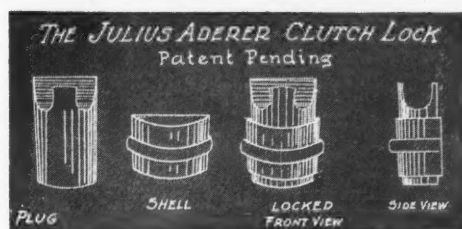
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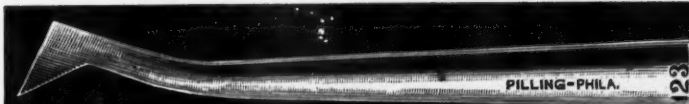
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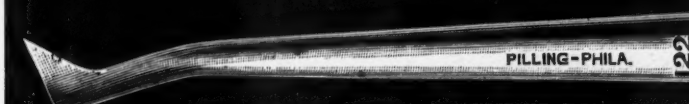


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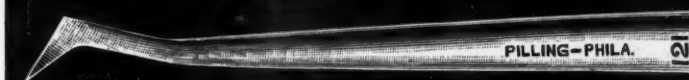
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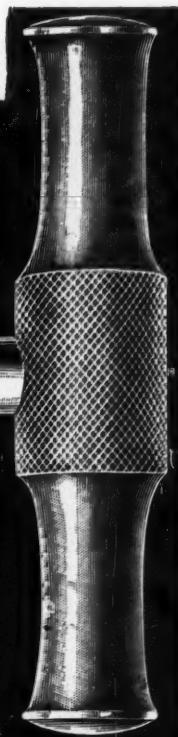
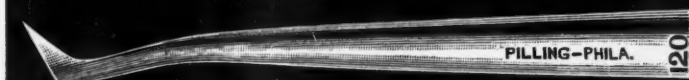
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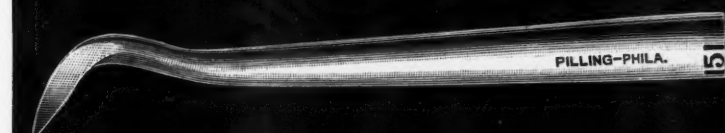
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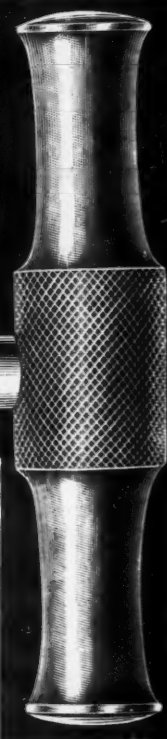
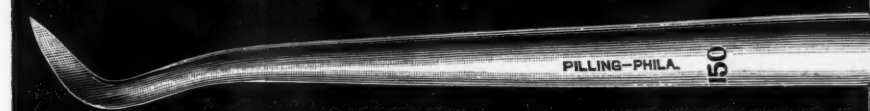
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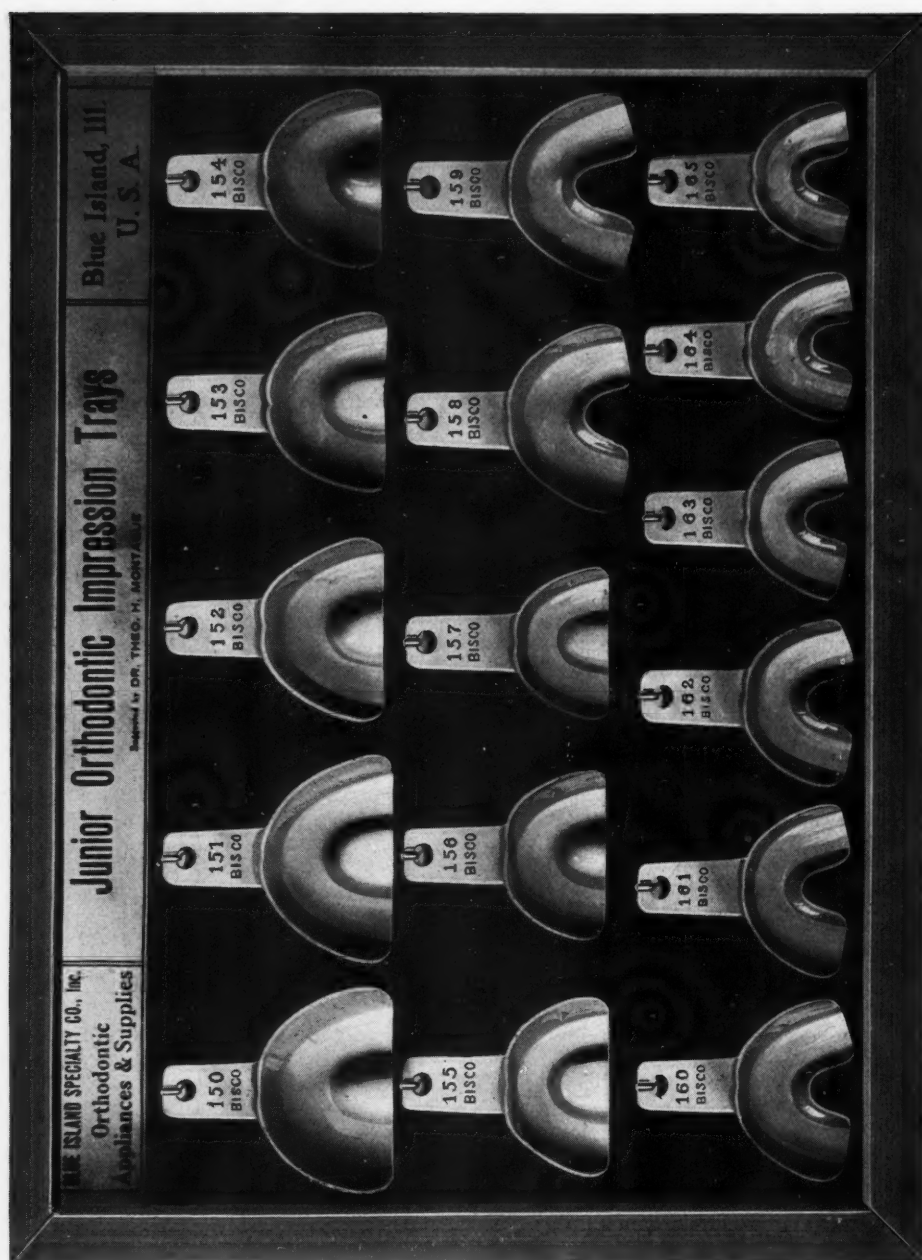
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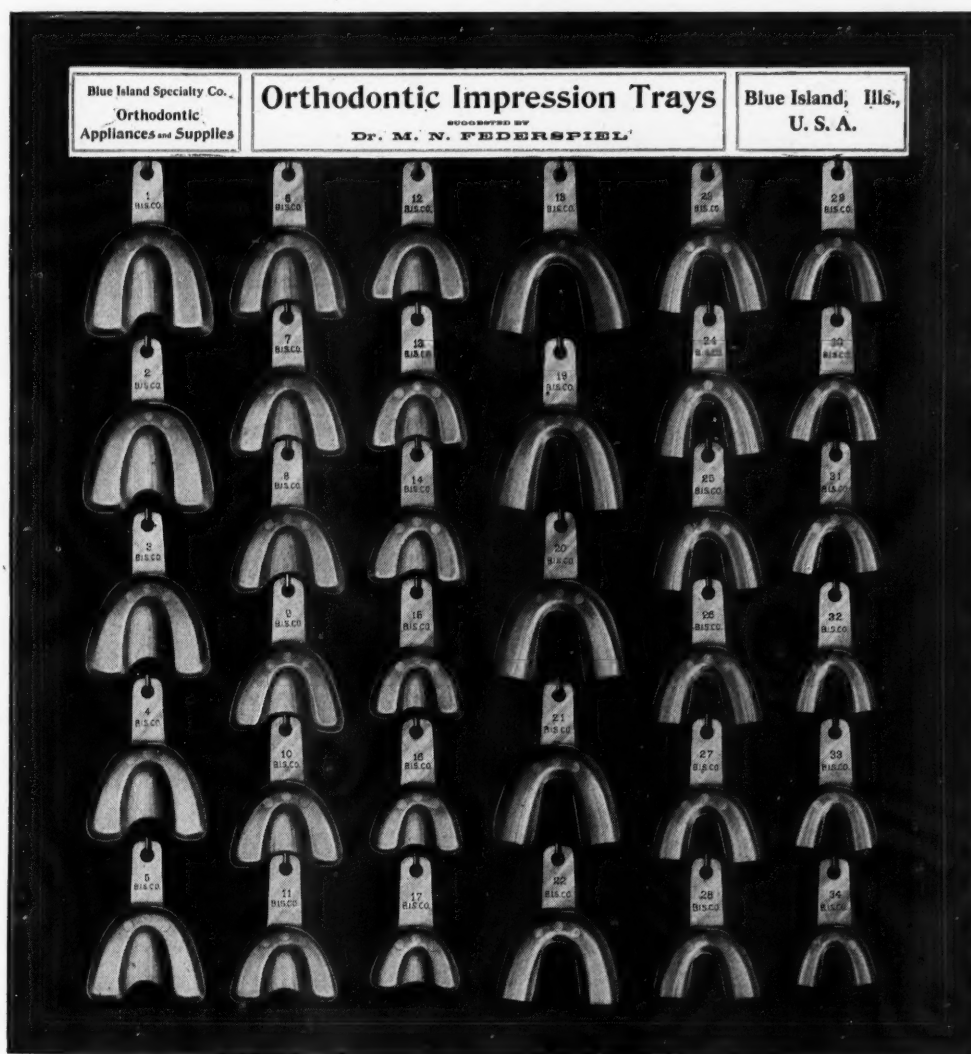
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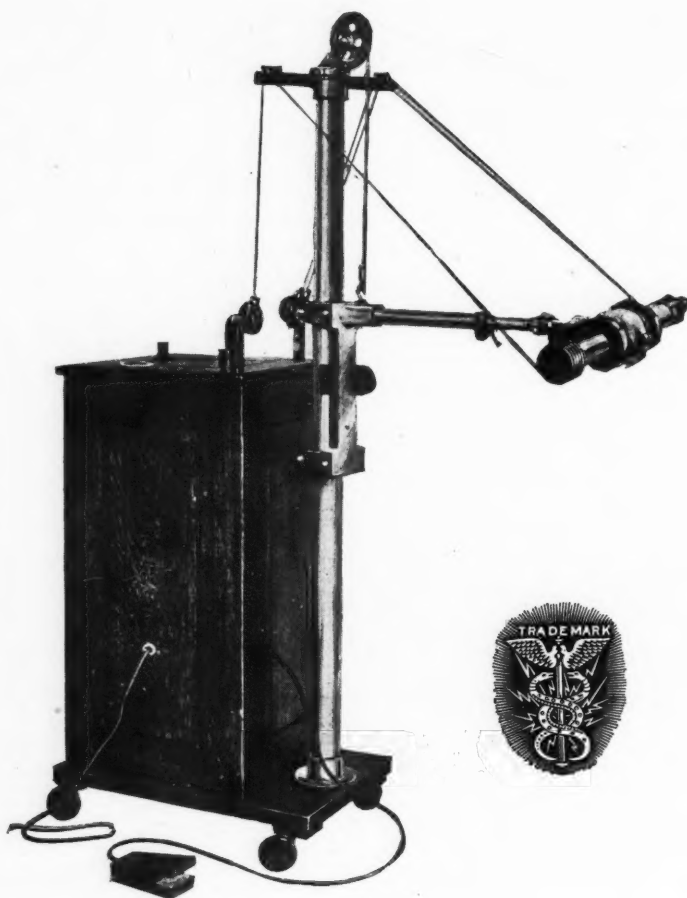
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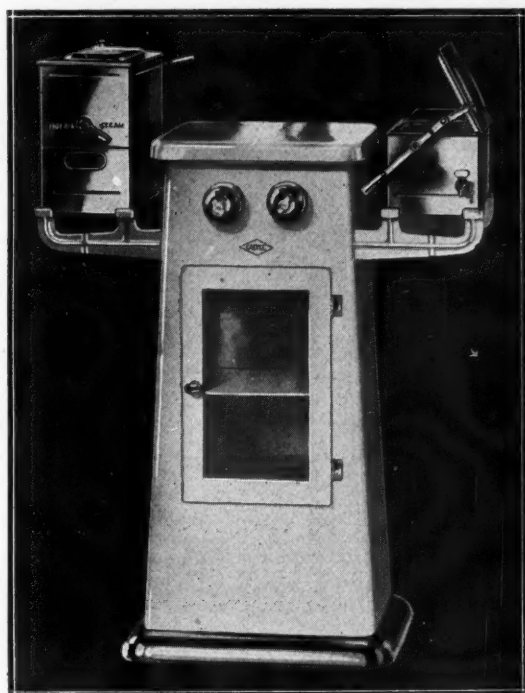
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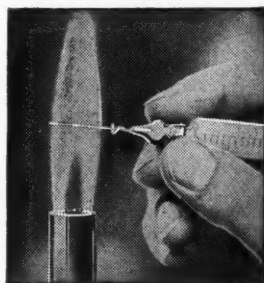
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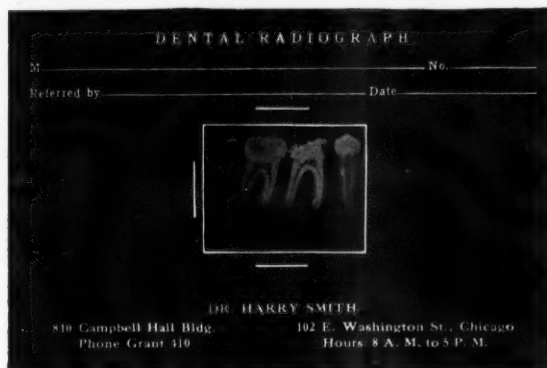
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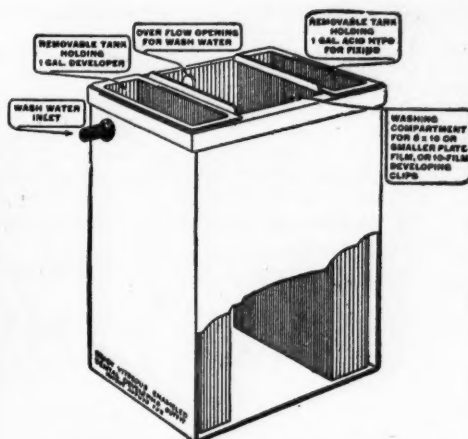
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All business communications should be addressed to the Publishers: C. V. Mosby Co., St. Louis.  
(See page 947 for further information.)

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